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Reports on institutional research presented at the Third Annual National Institutional Research Forum, held at Wayne State University in May of 1963. The Forum was divided into general and special seminars which concentrated on the methodology of institutional research. Topics covered included the following:

- A University President Looks at Institutional Research, Francis H. Horn.
- Institutional Research: A Basis for Planning with Special Reference to the Large Public University, A. J. Brumbaugh.
- Institutional Research as a Basis for Planning Publicly Controlled Institutions, John Dale Russell.
- Institutional Research as a Basis for Planning Large Privately Controlled Institutions, Stuart Grout.
- Institutional Research as a Basis for Planning: Small Privately Controlled Institutions, James L. Miller, Jr.
- Pre-Admissions Evaluation and College Scholastic Progress Patterns, John R. Hills.
- Planning College Facilities, John X. Jamrich.
- Needed Research in Special Areas: Faculty Characteristics, Non-Academic Personnel, Graduate Students, Reece McGee.
- Research Related to Decision Making, Algo D. Henderson.
- Problems of New Faculty Members, Harland R. McCall.
- Faculty Satisfactions and Dissatisfactions: A Methodological Study, Joseph Tanenhaus, Sidney G. Roth, and Robert H. Lilienfeld.
- Assessment of Faculty Satisfactions and Dissatisfactions Through Mobility Studies, Robert L. Lathrop.
- Student Followup Studies—A Research Design, Lewis B. Mayhew.
- Comments on Student Followup Studies, Junius A. Davis.
- Budgetary Implications of Faculty Load Studies, D. Gordon Tyndall.
- Problems in Interinstitutional Cooperation in Research, W. Robert Bokelman.
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L. Joseph Lins
Editor

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THE ROLE OF INSTITUTIONAL RESEARCH IN PLANNING

Proceedings of
Third Annual National Institutional Research Forum
McGregor Conference Center
Wayne State University, May 5-7, 1963

Edited by

L. Joseph Lins

Office of Institutional Studies
The University of Wisconsin
Madison 6

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TABLE OF CONTENTS

Page

PREFACE iii

A University President Looks at Institutional Research --- Francis H. Horn. . 1

Institutional Research: A Basis for Planning With Special Reference to the Large Public University --- A. J. Brumbaugh 15

Institutional Research as a Basis for Planning Publicly Controlled Institutions --- John Dale Russell. 25

Institutional Research as a Basis for Planning Large Privately Controlled Institutions --- Stuart Grout. 33

Institutional Research as a Basis for Planning: Small Privately Controlled Institutions --- James L. Miller, Jr. 43

Pre-Admissions Evaluation and College Scholastic Progress Patterns --- John R. Hills 51

Planning College Facilities --- John X. Jamrich 61

Needed Research in Special Areas: Faculty Characteristics, Non-Academic Personnel, Graduate Students --- Reece McGee. 71

Research Related to Decision-Making --- Algo D. Henderson 81

Problems of New Faculty Members --- Harlan R. McCall. 85

Faculty Satisfactions and Dissatisfactions: A Methodological Study --- Joseph Tanenhaus, Sidney G. Roth, Robert H. Lilienfeld. 93

Assessment of Faculty Satisfactions and Dissatisfactions Through Mobility Studies --- Robert L. Lathrop. 121

Student Follow-up Studies - A Research Design --- Lewis B. Mayhew 127

Comments on Student Follow-up Studies --- Junius A. Davis 137

Budgetary Implications of Faculty Load Studies --- D. Gordon Tyndall. 141

Problems in Inter-Institutional Cooperation in Research --- W. Robert Bokelman. 147

Assessing the Effects on Learning of the Newer Media --- C. R. Carpenter. . . 153

PROGRAM 159

FORUM PARTICIPANTS. 165

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PREFACE

THE NEED FOR institutional research in colleges and universities is rapidly being recognized. Increased emphasis on analyses of institutional data has been fostered by the rapid changes in the role of education in preparing persons for local, state, national, and international service.

Enrollments have increased rapidly and shortly will increase even more rapidly; physical plants must be planned so as to most effectively meet future needs; the rapid expansion of knowledge and increasing number of necessary disciplines require careful consideration of future curricular offerings; more must be known about students and their backgrounds in order to establish the best admissions policies for the particular institution; the goals and objectives of the institution must be reevaluated, and revised on the basis of that evaluation should the evaluative research indicate desirable changes; it is important to know more about the faculty and non-academic personnel of the institution; the role of the institution in teaching, research, and service functions must be considered in order that there will be a proper balance of these functions; the various institutions should evaluate their offerings in **terms** of inter-state needs--this requires inter-institutional research; careful study is required of the place and advantages of the newer teaching media for learning. These are only some of the problems facing colleges and universities.

The Planning Committee for the Third National Institutional Research Forum recognized the many problems which might be discussed at the Forum meetings. That Committee was selective in its determination of the general issues which would be discussed. It also was felt that the results of research in one institution might not apply to another institution but that the methods for doing the research would be of interest to all institutions. Therefore, the Forum was divided into general and special seminars concentrating as much as possible on methodology. It was assumed that the participants already were familiar with the purposes of and the organization for institutional research.

Audience participation was recommended in order that there could be free exchange of ideas and methodologies. However, the speaker and panelists were asked to set the theme for each respective seminar or clinic session.

Although the editor of this publication recognizes the great worth of the exchange between the audience and the speaker and panelists, the publication is limited to the papers presented at the various sessions. He may or may not agree with the authors of the papers. References and general footnotes for each paper appear at the end of the paper.

In bringing these papers together, it is the hope that the publication will contribute to a better understanding of methods for analyses of data, the results of which might contribute to more sound administrative judgments and decisions. I personally and on behalf of the Planning Committee express deep appreciation to the authors of the papers for their contributions to the National Institutional Research Forum and for releasing the papers of the Forum sessions for publication.

L. Joseph Lins
Editor

NATIONAL INSTITUTIONAL RESEARCH FORUM

A UNIVERSITY PRESIDENT LOOKS AT INSTITUTIONAL RESEARCH

Francis H. Horn
President
University of Rhode Island

IT IS a pleasure to open this National Institutional Research Forum. I have some temerity in speaking tonight, however, in the presence of so many pros in the field. You have lined up a terrific group of participants, some of whom know more about higher education than I ever will in spite of the fact that in addition to being a university president I am, by title anyway, a professor of higher education. I ought to speak softly in a conference at which you will hear from such experts as John Dale Russell, whom I once served as assistant dean and from whom I learned a good deal, A. J. Brumbaugh, whose pamphlet I trust you have all read, Algo Henderson, Jim Doi, Lew Mayhew, John Jamrich, Bob Bokelman, Ray Carpenter, Sam Baskin, and many others. But some of those on the planning committee know I never speak softly and know my predilection for controversial statements. They believed my remarks tonight might help precipitate you rather forcefully into your deliberations.

Certainly, I doubt if you can find a university president who is more convinced of the value of institutional research than I am. I established our Office of Institutional Research in the spring of my first year as president of URI, snaring as its director Ted Hallenbeck, whom I regard as one of the best institutional research men in the business. He has done a terrific job, yet I am far from satisfied with the operations of his office. Much as we are doing at Rhode Island, I believe we are only scratching the surface so far as institutional research goes. In any case, I have some ideas about institutional research, which I am glad to toss out for your consideration. They are perhaps a bit unorthodox and not in accord with the views of some of the leading institutional research practitioners. But I trust you will find them helpful.

After the habit of academic man, let me begin with a definition. I find Dr. Brumbaugh's quite adequate. Institutional research includes, he states, "Studies and investigations focused on current problems and issues in institutions of higher education . . . (also) studies and investigations of problems and issues that are basic to long-range planning or that may ultimately have implications for institutional operations."[1] The ultimate goal of institutional research, NEBHE says, is to base policy decisions on reliable information about the institution itself. Since many educators and management experts distinguish policy from operating decisions, I am inclined to leave out the term "policy." Certainly Brumbaugh is correct when he writes: "The key to effective administration is the ability of the president and those who work with him to ask the right questions and then find the right answers. But the right answers . . . must take into account all the relevant, factual data--the kind of data that only institutional research can provide."[2]

Ideally, the president should be his own director of institutional research. There is value for him even in gathering raw data. The president is supposed to be the one individual who sees the institution in its wholeness. He learns about the institution as he gathers facts about it and studies them. But he is just too busy to do the research, so he must rely upon the office of institutional research to do it for him.

More than any other single individual, the president has the responsibility (1) for insuring that the institution is run effectively day by day, and (2) for planning intelligently for the institution's future development. He has many colleagues who share various aspects of this broad responsibility, but the president remains the key figure.

In many cases, however, as President Dodds[3] has pointed out in his recent book on the college presidency, he has lost control of the task--not in any sense of autocratic power, but merely in the sense of influencing to any significant degree the operation and development of the college or university he heads. I look upon the office of institutional research basically as an administrative agency to help the president and his major academic and non-academic colleagues to regain some measure of control over the institution, so that it can be operated more intelligently, efficiently, and effectively.

The results of institutional research are not to be used primarily to ram some administrative decision down the throats of an opposing faculty, although if the research results are clearcut enough, this may on occasion be justified. But if the research is used properly, and if there is full and free discussion with the faculty or others involved or concerned--the students or alumni, for example--the results of institutional research will hopefully convince the faculty or others of the justification for changes. I agree with Brumbaugh's optimistic statement: "No matter how persistent they may be in their prejudices, or how ruggedly they may cling to their power or control, faculty members are not immune to the argument of factual evidence."[4] Let me make it clear that the justification for an office of institutional research is not to help administrators gain some measure of control they have lost largely in the post-war expansion and reorientation of higher education. Its justification is that institutional research provides data upon which intelligent decisions can be made. I do happen to think, however, that wise decisions are more likely to be made if administrators have more influence within their institutions than at present. But regardless of the role one assigns to the president in institutional policy determination and in operating decisions, and to his major administrative colleagues, the need for institutional research is obvious.

Yet the role and importance of institutional research has been very slow of recognition. Stickler's[5] study, made in 1958-59, showed that only about one-fifth of the land-grant colleges and state universities had full-time coordinators of institutional research. There are a good many more since then, but institutional research hasn't caught on everywhere by any means.

What are the reasons for this slow growth and failure to recognize the importance of institutional research? Institutions of higher education have an ancient lineage--they are the descendents of the great medieval universities of Paris and Bologna, of Oxford and Cambridge. Like all human institutions with such long pasts and traditions, they are fundamentally resistant to change. They tend to go on doing things in the same old, presumably time-tested ways. The organizational set-up of colleges and universities, moreover, with its conflicting and ill-defined division of responsibilities for decision-making, does not facilitate and promote change. The nature of academic men, brought up in this system and in effect conditioned by it, reflects these circumstances. President Dodd points out what every president soon learns from experience: "Our faculties are, of all the professions, the most resistant to change and in a fine strategic position to exercise that resistance."[6]

Another characteristic of the academic man that has hindered the development of institutional research is that he regards himself as an expert on education. In his own field of specialization, he makes judgments on the basis of the evidence. He is research-minded. He withholds judgment until he has examined the facts. But in educational matters, personal experience is regarded an adequate basis for conclusions and practices. Consequently, positions are often taken and decisions arrived at on the basis of assumptions which may never have been tested or which educational research may long since have proved to be without foundation. Consider, for example, the continued advocacy of certain traditional subjects because they "train the mind," and the corollary, the transfer of training, although psychology has long disproved or qualified the contentions. Or consider the almost religious convictions of many faculty members concerning the superior merit of small classes, the faculty-student ratio as a measure of institutional quality, the necessity of regular class attendance, and other long held items in the extensive folklore of academia.

So faculties hold fast to their accustomed routines and practices. Academic bookkeeping is little changed from earlier days. Classes for the most part still meet three times a week, with lectures scheduled for the morning hours and laboratory periods in the afternoon, and the academic year still follows a calendar justified only by an agrarian society of long ago. These traditional ways may be the best ways to do things, but we need more objective evidence. Lacking it, colleges and universities have muddled through. Faculty committees have pooled their ignorance and their prejudices and the institutions go on doing the same old things, though often under new labels, which fool only the public--and not even the public for long!

Most of the significant experiments in higher education since World War I have made little headway. They have disappeared, like the four-year junior college, or come closer to the main stream of American higher education, as with the experimental colleges such as Rollins, Bard, Bennington, and Sarah Lawrence. After a quarter century, no college has followed St. John's, although it now has plans to establish a second St. John's in New Mexico. No one has set up the New College outlined by Shannon McCune and his colleagues, however sound and logical its blueprint. Dozens of new institutions are started every year, but basically they are all in the standard pattern. In spite of all our vaunted diversity of American higher education, there is little real diversity. Whether privately or publicly controlled, small or large, poor or rich, our colleges and universities are, at bottom, very much the same. Variations from the standard pattern and practices are rare and fundamental changes within institutions come slowly. I must admit, rather unhappily, that many presidents are just as inclined as are faculties to make decisions based upon hunches, prejudices, prior experiences, etc., and to maintain the academic status quo.

Yet to continue to operate colleges and universities in the future as they have been operated in the past, to go on making decisions by such unscientific and ad hoc means as have prevailed, can only lead to the failure of higher education to meet the challenges and opportunities ahead, if not, indeed, to downright disaster. It is time we all, those of us in the institutions and the public as well, recognized that higher education as usual just won't do. In the years immediately ahead, colleges and universities will develop in the light of two overriding conditions--growth and change.

The facts on growth are so well known to you that I need scarcely mention them. This year's better than four million full- and part-time college students will probably double in one decade and possibly triple in two. The increase in the numbers of undergraduate students will surely be exceeded, percentage-wise, by the increase in graduate students. The demand for specialized training in almost all fields has made a master's degree almost mandatory in many professions where heretofore a bachelor's degree was adequate. The doctor's degree becomes increasingly the card of admissions, or at least of advancement, in an increasing number of fields. Post-doctoral work has already begun to impose serious burdens on many universities.

The rapid expansion of the numbers of students calls for a major increase, though not proportionate to student growth, in the number of institutions. New institutions of all kinds will come into existence and branch campuses of existing institutions will multiply. The modification of institutions will accelerate, with junior colleges becoming senior colleges, single purpose institutions becoming complex, and colleges becoming universities. Such institutional changes, incidentally, should be soundly based on careful research studies.

Necessary to meeting the needs for expansion, of course, must be more inter-institutional cooperation, and more state and regional planning. Many states are tackling the problem of meeting the expanding needs for higher education on a state-wide basis, and state surveys of higher education have become commonplace. The latest master plan in California is one of the most thoroughgoing, and surely one of the most interesting, attempts to plan a coordinated attack on expanding higher education.

Each institution, regardless of its nature, will face the pressures for growth. Most of the expansion will have to be met by publicly supported colleges and universities. It is unlikely, however, that even the most selective of private institutions will be able to resist growth pressures, no matter how determined they may be to hold to their present enrollment. Growth, both within each institution, and within all higher education, will present a continuous problem in the years ahead. Institutional research studies are essential to institutional decisions about meeting the problems of growth.

But perhaps even more significant in relation to institutional research is the fact of change other than growth. It will be much harder, I believe, for institutions to provide for curricular change, than for mere expansion of numbers of students. Yet curricular change is inevitable, made necessary by the explosion of knowledge, with resulting modifications in training for the professions. In some fields, our knowledge is doubling in a decade. In many, knowledge is changing so rapidly that what one has learned in college is soon out-of-date. Technology is moving so fast, for example, that engineers graduating this June will find half of what they know obsolete in 1973, and only half of what they will need to know in 1973 is now available to them.

Certainly, some curriculums that prepare for specific jobs will disappear and new job categories for which collegiate preparation is essential will find their way into the curriculum. Nuclear engineering and space science are examples of relatively new areas for which the universities have had to make place in their curriculums. The universities, the primary discoverers of new knowledge, will need to incorporate such knowledge promptly into their teaching and in other ways adjust to the rapid changes that will affect higher education. This will be no easy task. The history of higher education reveals a continuing resistance to the admittance of new knowledge and new fields of study into the curriculum. In the fifteenth and sixteenth centuries, it was Greek humanistic studies; in the eighteenth and nineteenth, science, and then modern language and literature, and the social sciences. In the twentieth century, it has been various vocational fields. But if higher education is to discharge its obligation to society, it must find ways to change.

What are some of the concomitants of the constant growth and change that lie ahead and what are their implications for institutional research?

First of all, it is evident that costs will mount substantially. From its current cost of less than five billion annually, it is estimated that by 1970, the cost of higher education in America will be between eleven and thirteen billion. Certainly, we must know more than we have been content to know in the past, about where the money is coming from and how it is spent. Since the cost is so great, moreover, we must endeavor to see that the funds are spent more economically and efficiently in all areas of operation.

Second, it is certain that we face shortages of competent faculty members, critical shortages in some fields. Consequently, we must find ways of using our faculty more efficiently. We must search for substitutes for the traditional teaching procedures.

Third, there is greater need than ever before for effective planning. Our planning must be better, it must be more inclusive, and it must concern itself with both immediate and long-range plans, with the long-range plans subject to periodic review. As I have indicated, moreover, there is need for more inter-institutional planning as a means of meeting the problems facing higher education.

Finally, there is more need for public relations than heretofore. The increasing pressures for college admissions, all of which cannot be met, and which will be a special problem for certain institutions; the mounting cost of higher education; and the generally more vital role which colleges and universities play in the national welfare--all these matters must be explained to the public. The people, whether or not they are the consumers of higher education, cannot be disregarded. They will need to have facts about the needs, the changes, the responsibilities of institutions of higher education.

Institutional research has a role in all these matters. One cannot find a better statement of the imperative need of institutional research than in the resolutions of the 1962 Annual National Conference on Higher Education.[7] Resolution Number Two stated:

"In recognition of our responsibility to make the most effective use of our present human, physical, and financial resources, we believe it imperative that institutions of higher learning keep their own houses in order. To this end, this conference recommends:

1. that each institution identify clearly its own particular purposes and functions and direct

its energies to the fulfillment of these ends.

2. that each institution make maximum use of present resources by reviewing its policies and practices with particular attention to its provisions for faculty salaries, fringe benefits, incentive programs, instructional methods, teaching loads and research activities, its student-faculty ratios, and space utilization.
3. that each institution, in the light of its definition of purpose and function, examine its programs of student selection, financial aid, academic placement, counseling, and provisions for transition from school to college, from junior college to other colleges, and from college to professional and graduate study.
4. that each institution join with neighboring colleges and universities in exploring ways and means of combining resources to eliminate unnecessary duplication and to supplement each others' faculties, facilities, and programs.
5. that institutional faculties and professional associations in their free and intensive pursuit of knowledge in ever increasing specialization devote attention and respect to our common intellectual heritage and, in particular, to bridging gaps between disciplines so that the unity of knowledge may be transmitted to our students."

The means of carrying out effectively the various parts of this resolution lie in institutional research. To do the job most effectively requires also a special bureau or office of institutional research. Let me now take a look from the standpoint of a university president at the role of institutional research in terms of the specifics it should be dealing with, the studies it should be making. Let me acknowledge that what follows has not been researched itself, and is, in a sense, a violation of the spirit of institutional research. It springs primarily from my personal knowledge and experience and may reveal more ignorance of your field than a university president should be caught with. I'm sure most of you believe, no doubt with justification, that some presidential ignorance is par for the course!

It is evident to every university president that an institutional research office is necessary if for no other reason than to fill out the multitude of questionnaires that flood his mail. Completing questionnaires is certainly one of the more immediately useful responsibilities of the institutional research office. Let me suggest some of the major areas with which it must be concerned.

Perhaps the earliest role for institutional research was in planning, especially forecasts of enrollment, both immediate and long-range. We are getting pretty good data on enrollments, at least at the undergraduate level, and by major divisions of schools and colleges. But what we are not getting--and perhaps cannot get reliably, is forecasts of enrollments by departments, especially at the graduate level. The determination of graduate enrollment is dependent upon artificial causes, because an institution buys graduate students, and trends are difficult to establish. Forces over which the institution has little or no control influence graduate enrollment--federal programs and subsidies, foundation support, and research grants. Arguments that an institution doesn't have to accept these handouts are unrealistic given today's attitude toward such largess.

The institution has really lost control of its graduate program, once the decision has been made to begin graduate work in a particular field.

Decisions on expansion often represent the forces so well outlined in that famous account, known to most of you, I'm sure, of the initiation and development of a program in Alligator Farm Management.

I don't know if institutional research can bring some order out of this chaotic situation or not--but it should try. Certainly there is need to forecast the need for faculty and facilities at all levels of instruction on the basis of careful study of what is essential to department and school or college. All too often, however, decisions are made on the basis of mere statements by a departmental chairman or a dean. He reports that he needs a new faculty member. How often is any investigation made to determine if the stated need is actually justified? Budgetary considerations are often taken into account, but seldom on the basis of definite and relevant facts.

The handling of facilities may be somewhat less hit or miss, but it too is seldom based on needs demonstrated by institutional research. The faculty complains of shortages of space. Somebody decides a new building is needed. The faculty plans it, then the plans are trimmed in terms of the funds available. But seldom are any of the decisions made in the light of carefully documented facts as to need. Certainly, institutional research help is essential if the planning for faculty and plant expansion is to be done on any rational basis. The need for new facilities is tied in, of course, with space utilization studies and enrollment forecasting--but much more remains to be done if institutional building is to reflect actual need.

In this connection, each institution should have a campus master plan, kept up to date by periodic revision based on actual experience. Priorities must be determined, although again, they must be continuously scrutinized to adjust, if necessary, to changing circumstances. The office of institutional research should be the one responsible for liaison with the campus planners, if an outside agency is used, and for the constant evaluation of the plan. It is particularly important that planning for residence and dining facilities be accurate, since these are financed out of current income and there is little leeway for error.

The role of institutional research in planning involves housekeeping studies--on space utilization, class size, teaching load, etc. After enrollment forecasting, such studies are the most common and generally the most successful of the office of institutional research. But too much institutional research effort in this respect does not go beyond status studies. In room utilization, for example, using the Russell-Doi formulas, one comes out with an idea of the comparative utilization percentage-wise, of laboratories and classrooms. But this is not enough. What use is made of these data? What suggestions does the office of institutional research have for more effective utilization, say by the redesign of existing space? Or by better control of class schedules?

When it comes to class size, the typical institutional research study provides information on the number of classes with different size enrollments. But seldom does it suggest reasons for the situation or make recommendations for improvement. Studies of teaching load are statistically interesting. But do they attempt to make sense out of the statistics in terms of the nature of the load, of the subject taught, and of the interests and capabilities of the individual faculty member?

I am pleading, therefore, to have an office of institutional research that is more than a statistics-gathering agency. The facts are necessary. But the office of institutional research must interpret them, indicate their meaning and implications, and recommend modifying action if appropriate. The office of institutional research, as I said in the beginning, renders advisory services to the president and other administrators; this should involve suggesting appropriate courses of action. This leads me to a third important area of institutional research--faculty studies. The most obvious are those related to salaries, both within the institution and in comparison with faculty salaries in comparable institutions and throughout higher education, although I am inclined to regard these latter data as of little real value. It is time for salary data that are more realistic. Many salary studies fail to present information which is meaningful, because the complete salary picture is lacking. Supplemental institutional income, as from extra teaching and research, and the handling of fringe benefits obscure the facts. The AAUP salary reports, for example, leave much to be desired for useful comparisons.

Much more remains to be done at most colleges and universities on other studies concerning the faculty. Brumbaugh[8] rightly points out: "Faculty characteristics, needs, functions, conditions of service, morale, motivation, outlook, imagination, these are only a few of the subjects that are appropriate for institutional research." For example, how many institutions have made studies of the loss of faculty personnel? For many years we have hollered about the loss of teachers to business and industry because of allegedly higher salaries. How many of us have really studied the record in our own institutions?

There is need for research that will bring more intelligent practices into the recruitment of new faculty. Higher education can't hold a candle to business and industry when it comes to the efficient recruitment of new personnel. The office of institutional research could surely help find ways to make faculty recruitment less a hit or miss proposition, less subject to chance and more determined by sound recruiting techniques.

A fourth area requiring more and better institutional research is institutional costs. Some standardized procedures have been established which provide better cost data, but much remains to be done--in the area of budget analysis, for example. We know too little about the cost of particular operations. We should know not what we are spending for admissions or for placement, for example, but what the cost is per student recruited or placed and why it costs what it does. Then comparative data are needed which will help us determine whether or not we are spending too much for such services. Do we have a planned program of promotion, or do we rather accept the word of a department chairman or a dean that his operation needs a new brochure and make a decision primarily on the basis of whether or not the budget can stand the added expense?

Much more information should be available to administrative officers on unit costs--not just the cost per student, for example, but the cost per student by department and school, undergraduate and graduate. There is much folklore about the cost of educating students, and we are all less than scrupulous in talking about the subject. Even the Council for Financial Aid to Education is guilty of maintaining that "no student ever pays the cost of his education." This is nonsense. Not a few institutions exist off student fees, and pay for their buildings out of such income. In most colleges and universities today, students are not only paying the cost of operating and maintaining dormitories, dining halls, and unions, they are paying construction costs and interest charges as well.

I suspect that even at Harvard if adequate cost studies were made, separating support for graduate education and research, they would show that the tuition paid by undergraduates actually covers the cost of their education. The last time I saw the figures (they were for 1959-60) Yale stated that the net cost to Yale per student was $1602. Upon inquiry, I was informed that the figure was arrived at by a formula which took the total university expenditures, subtracted income from charges on term bills and from gifts (exclusive of the Alumni Fund), and divided the difference by the total university enrollment. The result was the net cost of Yale's annual subsidy to each student. I question the defensibility of the formula.

The practice of my predecessor at the University of Rhode Island was just as indefensible. Every year, he published figures on the cost per student to the state. He arrived at his figures by dividing the total state appropriation by the number of full-time students. But what about the part-time students? The Evening College operation was subsidized. And should the student be credited with the cost of agricultural research and extension which required state funds?--or the cost of the increasingly numerous service functions state institutions, and many private institutions, render? Should the cost of rare books purchased for the library, or of expensive pictures for the art gallery, the cost of research or testing equipment for faculty research, be charged to the cost of educating the undergraduate student?

And what about significant figures in connection with increasing enrollment? At what point, for example, do additional administrative or other costs make additional enrollment with its tuition income a loss rather than a gain?

It is increasingly difficult to get meaningful and useful figures--but we must somehow try to get them. We need figures for the operation of departments, in terms of undergraduate and graduate enrollments, majors and non-majors, service courses for other departments and schools, research, basic and applied (with income from grants, fellowships, etc., clearly identified). We need more, we need to have data concerning minimum and optimum needs for an instructional or research program. In agriculture, for example, how many acres are necessary for a particular crop to make the research results reliable, or how many cows must there be in a dairy herd to satisfy instruction in dairy husbandry? In psychological or medical research, how many cats or dogs must be used for experiments to produce reliable results? The animals cost money. The faculty member requests a certain number. What data are available to help the administration decide if the number requested is necessary?

I'm probably barking up an impossible tree but, as a university president, I feel practically helpless before such questions. Maybe all I can do is to trust faculty members and my administrative colleagues to be reasonable. But after thirty years in college work, I would feel a lot more comfortable if facts were available to justify the requests. Perhaps the office of institutional research can't provide such facts. But I'm not aware that many are even attempting to get the data. And we are really hurting to have it. As the cost of higher education grows ever more burdensome, increasingly better cost data are essential to effective and economical operation.

The matter of cost ties in with a fifth area of concern to institutional research--the administration. Parkinson's Law is as characteristic of college administration as expansion is of academic departments. Consequently, administrative operations need the scrutiny of the office of institutional research and the facts basic to intelligent decision making. This should extend to administrative organization as such, and also the matter of so-called faculty government, including faculty participation in institutional policy determination. I need scarcely mention the area of improved administrative techniques, as through the use of machine methods and data processing equipment. Considerable institutional research is being carried on in such matters, although more is essential.

I have pointed out the need for extending, improving, reforming institutional research in the areas of 1) enrollment forecasting, 2) institutional planning, especially in the expansion of faculties and facilities, 3) faculty studies, 4) cost analyses, and 5) administrative efficiency. Let me now turn to some suggestions regarding the need of the office of institutional research to rethink and replan its operations.

In one area, the study of institutional goals and objectives, there is decreasing need for activity. I am willing to concede that every institution from time to time is justified in reexamining its fundamental purposes. But I question whether much real good results. The reexamination, in many cases, is not primarily a task for the office of institutional research, although it will be involved through the provisions of relevant data. The job is one essentially for the faculty and will for a time keep them out of other mischief.

Similarly, I take a somewhat dim view of comprehensive institutional self-studies, popular though they are and endorsed by many educational experts. There is value in the process--faculty members and administrators gain something by their involvement. But generally few significant changes result. The report is a series of compromises, arrived at as a result of faculty arguing of their usual prejudices. I remember that when Carroll Newsome, then president of NYU, presented at a special conference of educators the NYU self-study report (financed by a foundation grant of $400,000), he commented that it would make a good door-stop. It was indeed a heavy volume. President Newsome candidly doubted it was worth what it had cost.

The office of institutional research should be involved in continuing activities, many, admittedly, not unrelated to those commonly associated with a self-study. For example, institutional research is not achieving its potential in the area of evaluation. There should be more evaluation of the results of the institution's educational efforts--of the success, attitudes, and non-occupational activities of graduates, including records of baccalaureate graduates in graduate and post-baccalaureate graduate education. Most alumni studies have unfortunately been left to the alumni office, which is not properly equipped for such activity.

There is need for more evaluation of student achievement. Detailed correlation studies with admission practices, source of students, etc., are needed. Analyses of grades, of shifts in student objectives, and of mortality, by department and when appropriate, by individual professors, are needed. For the office of institutional research to make such analyses is treading on sacred ground, I realize, but we must give more and more attention to teaching effectiveness, and such analyses are relevant. I recognize the doubts and difficulties which make faculty members object to almost any attempt to evaluate teaching. But how are intelligent judgments to be made about faculty advancement without such evaluation?

There is need, furthermore, for more detailed evaluation of research accomplishment. When a board of deans and the president are considering promotions, etc., how is there to be any real judgment on the value and importance of the published papers listed on the evaluation sheet submitted by the responsible dean? I recognize that the people staffing the office of institutional research can't be specialists in the evaluation of a professor's research, but by studying the data submitted, especially when looked at in conjunction with all such reports and recommendations, they can help the president ask the right questions of the deans and be better acquainted with the performance of the total faculty. The difficulty of doing this in a large university is obvious, but in such an institution the help is valuable to other administrators involved in faculty evaluation, as well as to the president.

Much more attention needs to be given to the curriculum, especially to its proliferation. In too many colleges and universities, control of the curriculum has got beyond the administration. This is basically why Ruml made his proposal to lodge more of the control in the Board, working with the faculty and administration, not independent of them as Ruml's critics have so often maintained. I sit by helplessly, as month after month, I see the lists of new courses approved by the Graduate Council and the Faculty Curriculum Committee and then have to provide funds to hire the faculty to teach the new courses. More study of this matter by the institutional research people could, I believe, help the president, not to control the curriculum--control can never be recaptured by the president, and indeed it is probably undesirable that it should be--but to put the expansion of the curriculum on a more sensible basis.

The final area to which the office of institutional research needs to give greater attention is that of experimentation. Experimentation in higher education is increasing but there is still far too little. More is needed concerning teaching methods, independent study, class size, etc. In some cases, these experiments need to be brought down to the individual professor, to help him utilize his abilities most effectively. Certainly, efforts are needed through experimentation to convince faculty members that such time-tested practices as the three-hour-a-week class are at last open to question.

In this connection, the local office of institutional research has an obligation to become a clearing house for the results of research concerning higher education. It must report the conclusions of relevant studies and experiments in other colleges and universities. Special need exists for the development of more norms and standardized procedures. This means more communication and more cooperation among institutional research offices. A first step may be a formal organization of you institutional research people--although most of us feel that higher education is already overly organized. Surely, a journal or bulletin reporting problems of interest, studies in progress, results and recommendations, would be extremely helpful and I urge you to establish such a publication--although again, I believe that there are too many educational publications already.

Appropriate and interesting results of institutional research, both at other institutions and at one's own, should somehow be communicated to one's faculty and administrative colleagues. Some internal studies, of course, are for the president and his associates alone--but most of the work of offices of institutional research should get widespread circulation. I have emphasized in the beginning of my remarks the increasingly rapid change that will pervade higher education. As time honored practices are questioned, as changes are advocated or ordered, the faculty must have answers to their questions of why and how. The task of providing these answers will occupy a continuingly increasing proportion of the time of institutional research people.

What about faculty participation, therefore, in institutional research? There is considerable theory that the office of institutional research is an arm of the faculty, not of the administration. When Eckert and Kelly established the Bureau of Institutional Research at Minnesota thirty years ago, they declared: "This is not a program of research dictated by deans and presidents, but one shaped primarily by faculty members who identified problems in their own teaching or counseling and volunteered to aid in the study of them."[9] This is not my concept of institutional research. I'm inclined not even to agree with Brumbaugh,[10] when he writes: "A director of institutional research must guard the separation of his functions from the main stream of intellectual activity on the campus: he must involve faculty members and administrative officers jointly in planning, conducting, and interpreting results."

I accept the desirability of some faculty involvement. But I reemphasize my basic conviction that the office of institutional research is an administrative agency of the president's office. If the director is the kind of a person he should be, I am convinced he will establish rapport with the faculty and the rest of the administration.

In view of this convinction, I believe that the director of the office of institutional research should report to the president, not to the academic vice president or to any other administrative officer. His areas of interest extend beyond the academic program to student personnel, business affairs and public relations. He must be a close adviser of the president, a person against whom the president can test ideas and with whom he can discuss any matter whatsoever. No administrative colleague will be closer to the president. He must be a member of the president's cabinet or advisory council, no matter how small, and a member of any administrative council. Preferably, he should have faculty status, but this lies generally with the faculty itself. He should, of course, attend meetings of the faculty senate, and he will certainly be used by the president at trustee meetings. He should be a member of certain important committees and all building planning committees, except in those institutions where the staff of the office is large enough to include an expert on building planning and construction, who then should replace the director on such committees.

Obviously, I am talking about a very high level guy. He must not be just an educational statistician, although he must know his statistics. As he expands his staff, he will employ statisticians and other specialists in such areas as space utilization, cost analysis, etc. But the director, whether operating alone or at the head of a large staff, must be a generalist in institutional research--like the president himself. He must know higher education thoroughly, including its history as well as its current problems. He must be able to interpret facts and studies for the board, the administration, the faculty, and the public. So he needs imagination and judgment, he must be able to speak and to write effectively, and he should be willing to work the long hours that no one in the institution works but the president.

I admit there are not too many such guys around. Those who come up to these demands have the capabilities for the top administrative posts. The office of institutional research is an excellent training ground for presidential aspirants. If they are the kind of individuals I believe should direct the office, they will eventually make it, although some have more sense than to want to be a college or university president.

In conclusion, let me summarize briefly what I have tried to get across to you tonight concerning this university president's view of institutional research:

1. More and better institutional research is imperative as colleges and universities move into the critical years ahead of great expansion and rapid growth, with substantially mounting costs.

2. The function of institutional research can best be carried out in a

separately organized office charged with the task and given appropriate responsibility to carry it out effectively.

3. The director of this office should report to the president and be one of his closest and most trusted advisers.

4. The function of the office must be directed increasingly into the area of evaluation, including cost factors, and of experimentation.

I trust that your deliberations in the next two days will suggest how institutional research can be made increasingly significant and effective within your colleges and universities and throughout higher education. It has been good to kick off these deliberations tonight.

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INSTITUTIONAL RESEARCH: A BASIS FOR PLANNING WITH SPECIAL REFERENCE TO THE LARGE PUBLIC UNIVERSITY

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OUR NATIONAL landscape is dotted with the graves of colleges that have succumbed to the ravages of time and to circumstances beyond their control. It is reliably estimated that over the years about twice as many colleges have disappeared from the scene as are now in existence. In many instances, the sites of these colleges can no longer be identified. Whether the attrition of these institutions has been a gain or a loss to American higher education is a debatable question. Among the causes for their disappearance, undoubtedly, were poor location, the disappearance of a supporting constituency, fires or other catastrophies, and/or a lack of adequate support to enable them to survive the infirmities of old age. One thing is reasonably certain, at the time when they were established, there existed no criteria to determine the need for or the location of new institutions. There was very little by way of long-range planning. Many were established on the basis of expediency or to perpetuate the name of a distinguished church, community, or political leader. Even if criteria for the establishment of new institutions had existed and even if planning had been undertaken, some unfavorable conditions could not have been foreseen.

Some of our state institutions. once favorably situated with reference to their constituencies, now owing to population shifts and to new economic and transportation developments are relatively isolated. They are compelled by circumstances they could not foresee to re-evaluate their role and to plan the course of their future development.

But a college or university should not postpone studying its program and operations and its future role until compelled to do so by the pressure of circumstances. Institutional research is too often delayed until it is precipitated by a crisis. Then conditions become so complicated that the difficulty of developing a research design and of executing the research may be greatly increased. Some reasons for postponing institutional research or giving it a low priority as a basis for long-range planning are:

(a) Administration is a continuing process of decision-making. Decisions that must be made day by day are so pressing that the administrator finds little time to consider long-range planning and the studies that are needed for planning.

(b) The administrator lacks a clear conception of the values inherent in institutional studies.

(c) Financial limitations force the institutional studies into a low priority position in the operating budget.

In a word, the administrative climate in many colleges and some universities is not conducive to the conduct of institutional studies. Increases in faculty salaries, pressing library needs, maintenance and improvement of physical facilities--these are immediate and dramatic. To divert funds from them to studies that appear to be concerned with more remote needs is a difficult decision for an administrator to make.

Assuming that a climate favorable to institutional studies exists, what studies should be promoted and by whom should they be made? This is the question to which I wish to give primary consideration. When I review reports of conferences and institutes on institutional research, I am impressed with the recurrence of the same topics--faculty and faculty loads, students, enrollment projections, space utilization, and finance.

I wish to highlight a few areas in addition to these that are basic to institutional planning. They are cast in the pattern of a large public university but with some adaptation they may be quite as relevant to other types of institutions.

The Role of the University

Institutions are becoming more and more concerned about defining clearly their objectives and stating in what respects each institution has distinctive functions and characteristics. The printed statements that appear in college catalogs and brochures are more often a product of creative imagination than of institutional research, a fact that emphasizes the need for realistic research related to objectives.

Our society tends to be more dynamic and changing than are the higher educational institutions that profess to serve its needs. It becomes imperative, therefore, as a first step to identify changing social needs and their implications for each higher institution. How do these changes affect citizenship responsibilities; competences in leadership; competences in specific professions? What are the implications for institutional objectives and new program emphases of the role of our nation in world affairs? Is social change progressing at such a pace that knowledge and skills acquired in our colleges and universities are out of date before they can be applied? If so, each college and university must rethink its major curricular emphases and perhaps retreat from training in skills and technique to processes of logical thinking and analysis and understandings of basic principles and their application.

A specific illustration relevant to this point recently came to my attention. I quote it without identifying persons or the institution. In a university noted for its research in many disciplines, a professor of chemistry in a first course for undergraduates postponed his scheduled lecture and talked instead about the "noble gases" so called in the belief that they do not enter into compounds with other substances. The reason: only two days previously a report from a science research laboratory of the university reported the union of a "noble" gas with fluorine to form a new compound. These students getting their first insights into the intricacies of chemical compounds "live on the leading edge of today's explosion of knowledge." How important it is that students live on the "leading edge" of exploding knowledge in all fields. This can be achieved only when objectives and programs are in step with the march of new knowledge.

Social change is but one factor bearing on the determination of the role of a university. Each institution has its own constituency. It must know as precisely as possible what that constituency is, what its special needs are, what image the constituency has of the institution, and the extent to which the institution is serving the needs of its constituency. For example, one public university enrolls a large percentage of students from other states many of whom come from well-to-do families of high social prestige; another enrolls a large percentage of students from homes of limited financial and cultural status; still another enrolls more than the usual percentage of students who have a particular religious background. This relationship to a constituency is important in junior colleges, state colleges and universities, and land-grant colleges and universities.

Moreover, too often institutional objectives are printed for the information of prospective students and interested constituents without being translated into meaningful terms of student growth. Objectives are important to the degree that they are reflected in the educational program and ultimately in student achievement. What changes in a student's knowledge, ability to think, skills and personal traits are expected to take place between the time he enters and the time he leaves? What measures or indices are used to determine the extent to which these changes have actually occurred? What kinds of educational experience contribute most effectively to the achievement of these objectives? Course examinations may disclose what a student knows in terms of what his teacher expects him to know; but does what he knows in history, for example, enable him to see world situations in a new perspective? Does it give him a sense of the currents and countercurrents in the flow of history since the days of Adam and Eve?

Objectives, programs related to objectives, the measurement of student achievements in terms of objectives; these are all involved in this much needed area of research.

Quality

Much is said about the erosion of quality in higher education. There are no well established indices of quality, nor are there demonstrable evidences of the nature and extent of its erosion. The evidences of erosion of a landscape are ravines washed into hillsides, sediment carried in streams, and sediment deposits along flood plains. Are there analogous signs of erosion of quality in our state universities? We cite the declining number of Ph.D.'s on the faculty, the poor preparation of high school graduates, and costs rising faster than income in support of the contention that the quality of higher education is in jeopardy. There is also cause for concern about quality in the horizontal extension of institutional programs to bases around the world, and in the vertical development of programs at the graduate level by institutions that do barely creditable undergraduate work.

In a symposium on Social Change and the College Student[1] held only a few years ago, one participant made these observations:

> As we keep a larger and larger proportion of all students in school until they are sixteen, seventeen or eighteen years old, we necessarily lower the average scholastic aptitude of the total group that we are trying to educate, and, except in extraordinarily fortunate and foresighted communities, that means a lowering of the standards of achievement required for the high school diploma and a consequent postponement of certain kinds of learning until the college years . . . . It is inevitable that the average quality of all American college

> education will decline as an increasing percentage of high school graduates seek admission . . . . As we lower the degree of achievement indicated by the bachelor's degree, we can expect more and more demand for masters and doctors degrees and a greater tendency to postpone until graduate or professional school subjects now presumed to be suitable for undergraduate college.

Is this an accurate statement of current trends in higher education? What is the impact of mass education in the large university on the quality of its programs? Is graduate work, in fact, becoming more and more an extension of undergraduate education? We need objective evidence to support or refute the statements that both undergraduate and graduate education are deteriorating.

There are offsetting factors to these inroads on the quality of higher education. Among them are institutional self-studies, rising standards of admission, new approaches to teaching, and new methods of measuring achievement. Until a university has reliable evidence concerning the impact of this complex of factors on the quality of its programs, it cannot plan intelligently to improve quality.

Opportunities and Incentives to Learn

One of the questions most universities cannot answer is what do students learn, how and where? It is assumed that the classroom provides the setting for learning, that the curriculum provides the materials, and that the faculty member provides the guidance and incentives. How well this combination of factors achieves its purpose is not always clear. To what extent do students have to "unlearn" some things before they can learn others? What is the psychological effect on the student of this "unlearning" experience? Is the curriculum organized so as to provide a coordinated and progressive learning experience, or is it merely a collection of courses grouped under departmental labels? What kinds of learning opportunities do students experience outside of the classroom? Do these reinforce classroom learning? Do they interfere with it? Or are the two unrelated? Are there anti-intellectual influences on the campus? I need not be specific here because we all know that they do exist on some campuses. But, all too often, the administration is not aware of their existence or ignores their presence.

Referring more particularly to the teaching-learning process, Siegel and Siegel[2] say, "The time is long overdue when investigators stop inquiring whether one mode of presentation is as good as another, and undertake instead, investigations of those conditions thought to optimize the realization of educational objectives under clearly specified and delineated conditions."

The same authors cite six classes of student oriented criteria as "meaningful dependent variables" for exploring the "Instructional Gestalt.' In summary they are:

1. *Acquisition and retention of factual information* in the subject area. Factual information acquired is a criterion of some importance in assessing the educative impact of a particular course, even though it may occupy a relatively low position in the hierarchy of curricular objectives.
2. *Acquisition and retention of concepts and the development of problem solving facility* in the subject area.
3. *Quality of student thinking during the class period* while the presentation is being made or the discussion is in progress. This is a unique criterion since it is obtained *in situ* rather than as a post-course measure.
4. Development of *course-*

related attitudes. These include changes in the affective domain desired as specific outcomes of the course under consideration. For example, we might anticipate that an elementary psychology course ought to produce certain attitudes concerning the appropriateness of scientific method applied to the social sciences, the sources of international tension, the status of psychology as a profession, etc.

5. Development of curriculum-related attitudes. Certain kinds of affective development or change may be anticipated as a result of the total curriculum rather than a single course. This development may involve changes in the students' self-perceptions and general approaches to new or unfamiliar circumstances and problems.

6. Impact of the Gestalt upon the students' out-of-class activities, including such behaviors as vocational choice, leisure reading, etc.

Values of the Scheme

The Instructional Gestalt is intended to be a systematic framework for asking useful questions. It has considerable potential for helping us organize some of the things we already know, and generate hypotheses to fill some of the gaps in our knowledge. Most advantageous of all, it concentrates our attention on the basic teaching-learning process by making our concerns more pointed and sophisticated when we consider such instructional innovations as television, auto-instructional devices, and other products of our technological age as well as "conventional" teaching.

A matter of primary concern is the freedom of the student to learn in a way that best fits his abilities and interests. We have proceeded as though it were axiomatic that a student learns best under the regimentation of class attendance and at a pace established by the rate of progress of his classes. So strong is the belief in this regimented procedure in some institutions that a student is penalized for failure to conform. This whole philosophy of regimentation versus freedom of the student to learn by independent study or by other means adapted to his abilities and interests needs to be examined. Experiments testing various procedures should be conducted and measures of non-academic learning should be designed. Only by such means can the validity of the philosophy of curriculum organization and of provisions for learning be tested. Only on the basis of objective evidence can an institution plan to improve its curriculum and its instructional procedures.

Faculty

The faculty has been studied from a number of angles such as characteristics, conditions of service, teaching loads, scholarly contributions, and attitudes. One kind of study is badly needed. It pertains to the differentiation of functions on the basis of differential competences. For years, we have proceeded on the assumption that faculty members are equally competent to perform a variety of services such as lecturing in the classroom or on television, conducting class discussions, directing independent study, or preparing syllabi and examinations. Recent developments have challenged this assumption. Certain faculty members, because of their superior ability to prepare and present lectures on television, have been given this as their exclusive assignment. Others have been assigned the preparation of programmed learning materials, and still others the preparation of examinations. This beginning of differentiation of functions suggests the need for research to establish criteria by which faculty competences can be differentiated. Once such criteria are established, assignments can be made in terms of special competences to the great benefit of the students and of the teacher.

Effectiveness of Management and Operation

The effectiveness of institutional management and operation comprehends a wide range of activities. It relates to the plan of administrative organization and the allocation of administrative functions among staff members; provisions for faculty participation in planning and operation; plans for faculty expansion and development; the maintenance of effective communications among the staff and between the staff and both faculty and students; the organization of plans for the expansion and development of physical facilities; and the whole gamut of fiscal operations.

In fact, if one looks at this complex of administration, it seems clear that for purposes of institutional research it must be broken down into a number of subdivisions such as: central administration, faculty organization, management and planning of physical facilities, and financial management. Two of these phases of management--physical facilities and finance--have already been the subject of rather extensive studies. Our concern, at this point, is the central administration.

In studies and evaluation of management, business and industry have developed highly specialized procedures. There are, furthermore, consulting management firms that specialize in the study of the management of higher educational institutions. But many university administrators resist the idea of employing the methods of business and industry or of employing consulting management firms because, they say, higher educational institutions do not fit into a business management pattern. They are not operated for profit and their materials and processes cannot be standardized. Nevertheless, there is a product involved and the quality of the product is an index of the effectiveness of the process. Insofar as the situations are analogous, we can take several leaves out of business management's book.

The real crux of the study of college and university administration is decision-making. Who makes what decisions? What authority has he to enforce his decisions? What procedures are followed and what guiding principles, if any, are accepted? What provisions are made for faculty and student participation? What are the channels of communication among the staff and between the staff and the faculty and the students?

I recently heard it said of a university president, "He certainly plays his cards close to his chest. No one knows what he is thinking or what he will do next until it has happened." Of a new president, the remark was made, "He brings the faculty into administrative matters in a way that his predecessor never did. Sometimes I think he goes too far in this direction."

There can be no doubt that administrative procedures and their effectiveness reflect personality traits of the administrators. We may well ask, therefore, is there a combination of personality traits that characterizes the good administrator? Is there a combination of traits that characterizes the authoritarian administrator and another combination that characterizes the democratic administrator? Does one type of administrator more than another achieve efficient operation? What is the effect of "efficiency" on faculty-student morale? How can these traits be identified? Can they be acquired? How can a knowledge of these traits be used in selecting administrators--in preparing individuals for administrative posts?

These are not new questions as they relate to administration in business and industry. They are new, at least in their implications for research, in higher education and to some persons they are frightening.

It should be quite clear that administration is an area of such vital importance to the effective operation of an institution and to the spirit of the campus that it should be studied in depth.

The University Community

We often refer to a college or university in the real sense of the term as "a community of scholars." The implication is that there are certain bonds of intellectual interests that unite faculty and students in common intellectual pursuits. How true is this? Has this concept been lost in the mass education developments? Isn't it more often true that there is a wide gap between faculty and students? The very necessity of required class attendance, of deadlines for papers, of prescribed readings, and of general regulations governing the personal and organized activities of students imposed by faculty action appears to refute the concept of a community of scholars.

I shall not pursue this topic further. The "Study of Campus Cultures,"[3] a report by the Western Interstate Commission for Higher Education is such an excellent comprehensive treatment of the subject that I can do no better than to suggest that you read it with care. From it and from the "American College"[4] you will derive many more ideas about studying the campus University Community than I can possibly present in a paragraph or two. Let me caution you, however, that these sources will be most helpful in defining terms, designing studies, administering studies, and interpreting findings but they will not answer the basic questions relating to the socio-psychological attitudes and behavior patterns that determine the spirit of a particular university. Also, most studies that have been made relate to certain phases of the University Community; put together, they represent a mosaic embodying a variety of elements of the community life. A study of a campus community will require the construction of a design that includes those facets most relevant to the questions to be answered.

General Observations

In conclusion, may I make a few general observations.

1. Studies in the areas I have noted will require careful planning. This can be done best by a staff person experienced in the field of institutional studies and responsible for taking an over-all view of the planning needs of the institution. This may sound like a platitude. Even so its importance is often ignored.

2. No single institution can undertake the whole range of research problems, important as they are. Some arrangement should be devised for a division of responsibility among universities that have common research interests. One institution might concentrate on a study of administration with a view to arriving at a methodology that could be used by others; another might focus some of its research efforts on an analysis of faculty competences in relation to functions. Also, some research projects are of such a nature that they might be conducted on an interinstitutional basis. Such a project might be a study of the campus cultures, or factors that facilitate or detract from the achievement of institutional objectives.

In a number of states central administrative offices are conducting studies on problems that are of general concern. Among these projects are "role and scope studies," unit cost studies, teaching loads, and characteristics of students, to mention only a few.

Then, too, centers for the study of higher education are in a position to make the more sophisticated types of studies for which individual institutions may have neither the resources nor the personnel.

This approach to the allocation of research functions would minimize duplication and would give the most mileage for the effort involved.

3. Participation in the development of institutional studies by a small advisory committee composed chiefly of faculty members will give weight to the studies that are designed and will pave the way for their acceptance by the university community.

4. The services of specialists--for example, sociologists, psychologists, statisticians, educationists, physicians and psychiatrists, to mention only a few--will be required. A staff director of institutional research with the help of his advisory committee will identify these specialists and will arrange for their participation in the studies.

Moreover, projects in basic research are repeatedly conducted by specialists on a campus without any thought of their relevance to institutional planning. In "Bridging the Gap Between Basic Research and Education Practice"[5] the authors say, with special reference to a project supported by the U. S. Office of Education, "As the project progressed, we found that there is already much basic research in the behavioral and social sciences with potential educational value. We found, however, that nearly all such materials require a great deal of development through extension of fundamental insights, fresh applications of principles, and specific adaptations of procedures, before they can be put to use in the schools."

We need only substitute the term "universities" for "schools" to give this statement full relevance to our discussion. It devolves on the Director of Institutional Research, therefore, not only to identify specialists who may be involved in his research program but to discover basic research that by "extension of fundamental insights, fresh applications of principles, and specific adaptations of procedures" may be applied to institutional problems.

5. The findings of the institutional research should be presented in a clear, succinct, non-technical form. Insofar as they have implications for planning and action, these should be highlighted. It should not be assumed, however, that the value of the study is to be judged solely by its implications for planning. Some studies may merely point the way for more intensive or longer range studies in the area. Others may be in the nature of basic research the applications of which remain to be developed.

It is obvious that, in making this presentation, I have undertaken to sketch briefly a number of areas of institutional research any one of which might be the subject of an extensive paper. I have not undertaken to cover systematically all of the important areas nor have I endeavored to analyze each area into the many subtopics or specific projects that it comprehends. In fact, what I have said may be less appropriate for participants in this forum than for administrators and faculty members with whom you plan and conduct institutional research projects. I hope that within the limits of time and of my competence to deal with the subject I may have laid the groundwork for profitable discussion.

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INSTITUTIONAL RESEARCH AS A BASIS FOR PLANNING PUBLICLY CONTROLLED INSTITUTIONS*

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THE TOPIC of this seminar seems to imply that planning should be based, in part at least, on institutional research . . . . It logically follows that a project looking toward the planning of the future of an institution of higher education might be the occasion for some institutional research that would not otherwise be undertaken . . . . It is also conceivable that some insightful research into institutional problems might demonstrate convincingly the need for some planning for the future. Enrollment projections, as a simple example, have been known to lead to a decision to undertake a comprehensive planning project.

Pressures toward the Development of Long-range Plans in Publicly Controlled Colleges and Universities May Arise from Several Sources

A. The Legislature or other agencies of state government may need to look at a plan for higher education as an integral part of some total plan for public services.

B. The accrediting agencies have been active in suggesting the need for long-range plans in well managed institutions.

C. Some of the endowed foundations have been interested in seeing the long-range plans of an institution applying for any kind of a grant.

D. Members of institutional boards of trustees or regents, who are often familiar with the long-range plans of industrial concerns with which they are associated, may suggest the need for something similar in the college or university.

E. An astute administration, faced by the necessity of many day-to-day decisions that may have far-reaching effects, often desires the guidance that a long-range plan can give.

The Nature of Planning

A. A single institution can seldom do any valid planning without taking into account the probable development of other institutions.

1. This is particularly true for publicly-controlled institutions, but also for those under private control.
2. For state-controlled institutions, the state is the smallest

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*Outline of remarks.

unit that can be effectively used for planning purposes.

a. A master plan for the state is a first necessity, and the plans of the individual publicly-controlled institutions must fit into that master plan.

b. The individual institutions in the state will have a major part to play in preparing the master plan for the state's higher education, but its final approval must be by a jurisdiction superior to that of any one institution, if there is more than one publicly-controlled institution in the state. Examples of such a higher jurisdiction might be: (1) the state-wide coordinating agency for higher education, if the state has such an agency; (2) the state legislature or budget bureau; and (3) a voluntary association of the institutions affected.

c. Within the framework of a state's master plan there should be much room for each institution to develop its own plan.

3. In most cases the state itself is too small a unit for an effective master plan.

a. Few states have sufficient wealth and population to afford the offering of a complete program of higher education within their borders.

b. Regional cooperation in planning seems highly desirable if the widest possible opportunity to students is provided at reasonable cost to the taxpayers in most of the states.

c. Some of even the largest and wealthiest states have found it desirable to cooperate with other states in the provision of certain highly specialized opportunities for research and graduate study.

4. It is not enough to plan in cooperation with the existing institutions in the state or region, for thought must be given to the possibility of new institutions being established within the time span covered by the plan.

a. New junior colleges or community colleges are being established rapidly in a number of states.

b. A few states are establishing new four-year degree granting colleges and universities under public control.

c. Some new privately controlled colleges are being established throughout the country.

5. Valid planning for a publicly controlled institution of higher education must take into account the probable development of the privately controlled institutions in the area. When this is done, a fundamental question arises as to the justifiable spheres of activity for publicly and for privately controlled institutions.

a. In some states, the point of view seems to prevail that the publicly controlled institutions perform a residual function, i.e., they take care of whatever services are necessary beyond those that the privately controlled institutions are willing and able to undertake in adequate volume. For example: (1) quite commonly the privately controlled institutions are not much interested in preparing teachers for the elementary schools, so the state has assumed the responsibility of establishing normal schools and teachers colleges; and (2) there seems always to be a "residual" function of supplying education of good quality at low cost to the student.

b. In other states, the opposite point of view seems to be held; that is, that the publicly controlled institutions have basic responsibility for the entire range of higher education, with the privately controlled colleges and universities offering a few services or attractions that the publicly controlled institutions can not or do not provide. Examples of such services or attractions are: a religious atmosphere, curriculums preparing for church-related vocations, small size of enrollment, and highly selected student body.

c. In still other states, there is a rather effective balance of influence in the choice of programs and services, with the publicly controlled institutions agreeing to stay out of certain areas that are served by privately controlled colleges and universities, and the privately controlled institutions, in turn, happy to see those under public control take over the job of mass production in higher education.

d. The present situation and future trends in the relationship between the publicly and privately controlled institutions in a given state is a factor that must be taken into account in the planning that goes on in the publicly controlled institutions.

B. A second feature of institutional planning is that it is always based on certain assumptions.

1. It is of prime importance that all the assumptions be set forth clearly and kept in mind by all who are participating in the planning.

2. On many points on which assumptions must be made the planners face not just a dichotomy (that is. a yes-or-no or a will-or-will-not proposition), but rather a considerable range of possibilities.

a. A good example is the assumption about future enrollments. It is not just a matter of whether they will or will not increase, but rather of how much they will increase.

b. Forecasts in the enrollment area must be based on a combination of facts and further estimates or assumptions, such as: (1) the number of high school graduates in future years; (2) the percentage of high school graduates who will go on to college; (3) the percentage of high school graduates going on to college who will come to this institution; and (4) the retention rates through to graduation for those who will enter this institution.

c. Under such conditions it is wise to make more than one plan, each plan being based on some significant variation in the basic assumptions.

3. The assumptions should be as complete as possible.

a. Even if the assumption is made that there will be no change in a particular situation or factor, this should be set down explicitly, and defended.

b. As a matter of fact, one of the most hazardous of all assumptions is that there will be no change, for in times like these it seems that few features of higher education are likely to remain static.

c. There should be one or more explicit assumptions for every variable that goes into the forecast.

C. A third feature of planning concerns the length of time for which the forecast extends.

1. A generation ago we thought we had come a long way when institutions were induced to plan budgets on an annual basis, looking a whole year ahead.

2. Currently the emphasis is on planning for a 10-year span in the future.

a. To some extent the use of this 10-year time-span seems to have been influenced by suggestions from staff members of the Ford Foundation.

b. Curiously, also, this is about the average expected span of tenure for a new president in a college or university.

3. For many institutions, one of the most significant variables for future planning is the enrollment. The population group from which future enrollments will be drawn can be forecast reasonably accurately for about 20 years in the future, for at any one time nearly all who will be entering as freshmen for the next 18 years have already been born. This fact suggests that there might well be some experimentation with 20-year forecasts. In New Mexico, we did a little forecasting on a 15-year basis.

D. A fourth question in institutional planning is: "Who is to do it?" Two rather different answers to this question are found in practice.

1. Under one arrangement, the planning is the work of a few top-level administrative staff members.

a. In extreme cases, the president makes the plan all by himself. There seems to be a tendency: (1) for this method to be used when the presentation of a 10-year plan is a practically mandatory part of a request to a Foundation for a grant or series of grants; and (2) for this method to be resorted to when the 10-year plan is needed in a hurry; sometimes the president draws it up over night.

b. Sometimes the planning is done by the president and the members of his cabinet, usually including the academic vice president or dean, the director of student personnel services, the business manager, and the director of public relations.

c. There is some tendency for the planning to be considered a primary function of the public relations division, or the "development office" as it may be called. There are certain serious disadvantages in having the planning function assigned solely to the development office. It is pointed out that: (1) seldom do the personnel in the development office have the broad view of the entire institution and its problems that is necessary for effective planning; and (2) too often the development office has its vision limited by its ideas regarding the amount of money that it will be possible to raise. That is, instead of first developing a plan for what ought to be done, and then looking for ways of obtaining the supporting resources, the people in financial promotion are likely to think first about the amount of money that can be raised and then proceed to plan what might be done within that amount of money. It should be a fundamental axiom of all institutional planning that the amount of money that can be raised cannot be estimated until there is a careful analysis of needs to determine what the money should be used for.

2. In contrast to the situa-

tion in which the planning is a product of deliberations by one or a few of the top-level administrative officers, is the situation in which the organization for planning is based on a broad involvement of the many kinds of people whose interests are affected.

a. Several kinds of participants may be represented in the planning group, such as: (1) the board of trustees or regents; (2) the administrative staff; (3) the faculty; (4) the students; (5) the alumni; (6) the citizens of the local community; and (7) the state government (e.g., one or more members of the Legislature).

b. The organization under this arrangement is usually structured in committee form so that: (1) there will be a series of committees, or sub-committees, each dealing with some one aspect of the planning, such as enrollment forecasts, institutional purposes, curriculums, faculty, physical plant needs, etc.; (2) there will be a central coordinating committee, probably comprised mainly of the chairmen of the various sub-committees; and (3) the chairman of the central coordinating committee has a very important responsibility in (a) keeping the sub-committees moving along in their work, so that their decisions are available as needed in other parts of the planning, and (b) usually pulling the whole thing together at the end into some kind of a final report.

c. The arrangement for wide involvement of many people in the planning has the disadvantage of producing results rather slowly. At the very minimum, at least a year, and preferably two years, will be required to produce a good plan by this method, in contrast to the few hours of work that a president might need to do it by himself.

d. The great advantage of the committee method is that, when the plan is finally formulated, it is widely understood and accepted. It is "our" plan, not "his" plan or "their" plan. Details of the plan can be put into effect rather readily.

3. Under any arrangement for developing a long-range plan, it is often wise to bring in one or more outside consultants for advice on particular problems.

E. Another feature of the long-range plan for a college or university is the fact that it tends finally to be expressed in terms of finance or budget.

1. Sometimes it is simply referred to as the 10-year budget.

2. The feasibility of most of the features of a long-range plan must finally be tested by the ability to work them into a balanced budget.

3. This feature of a long-range plan has important implications for institutional research, for it usually means that there must be careful studies of the probable costs of projected programs and policies.

F. Finally, with respect to planning, it must be remembered that a plan, even the most perfect one imaginable, is still only a plan. It need not be slavishly adhered to when conditions change or when important assumptions on which it was based prove to be unsound.

1. Any departure from the plan must certainly be made very cautiously, and after full consideration of the circumstances that seem

to warrant such a step.

2. Some of the features of the plan, such as future increases in average salary of faculty, must not be viewed as a definite commitment, but rather as a goal toward which the institution is to work.

3. By the time there have been several significant departures from the plan, it probably is time to make a new long-range plan.

4. In a time such as the present, when higher education is undergoing rapid change and unforeseen situations are arising, a new 10-year plan will probably be needed every five years.

With this Background Concerning the Nature of Institutional Planning, We Can Turn to a Brief Consideration of the Place of Institutional Research in the Planning Process.

A. It is presumed that the institutional planning will rest on some kind of a factual, objective basis, and that it will not be merely the product of imagination untrammeled by realities.

B. The very first requisite is for an adequate set of statistics about the institution's past and present operations.

1. These should be available for at least 10 years in the past, and on some items the time series should extend back much further.

2. Areas in which basic data are most urgently needed are:

a. Enrollments -- most institutions have reasonably good enrollment statistics, extending back as far as likely will be needed.

b. Degrees granted -- these statistics are nearly always available and usually have a high level of accuracy.

c. Finance -- annual financial reports are likely to be available for a long series of years in the past.

d. Curriculums -- data on curriculums are seldom summarized currently, and any needed analysis of past trends in courses offered and graduation requirements must usually be dug out of the file of institutional catalogs.

e. Admission requirements and the qualifications of students admitted -- quite commonly the statistics in this area are scanty for past years; some institutions may have data for a few recent years on trends in test scores for applicants admitted.

f. Library holdings -- usually the librarian will have kept statistics on the number of books and periodicals, and other library data will be available for many years in the past.

g. Faculty and other staff members -- usually the institution will not have readily available statistics on staff members and their qualifications for any considerable period in the past.

h. Financial assistance to students -- in this area also only current data may be available, and records for past years may not be found in the files.

i. This list could be extended almost indefinitely, but the examples given are sufficient to indicate something of the scope of the data required.

3. In most cases, the available statistics in the files of the institution will be found incomplete or unsatisfactory in some or many respects, and supplementary data must be developed. A few examples may be suggested.

a. Available enrollment data may not distinguish between full-time and part-time students, and full-time equivalent enrollment data may never have been reported.

b. Financial data over a period of years may not have been classified and reported consistently in the same categories or in accordance with standard terminology.

c. Faculty data are rarely reported in terms of full-time equivalents.

d. Data on the qualifications of students may have to be interpreted into some common standard, if different measures and tests have been applied in past years.

4. For planning purposes, the institutional research office may be asked to develop the needed statistics, that are not already available, concerning institutional operations over a period of past years.

a. Often these have to be developed from basic records such as old catalogs, financial records, board minutes and faculty minutes, registrar's records, student personnel records, etc.

b. The development of this basic statistical information is hardly a true "research" project; it is merely the repair work occasioned by lax attention in past years to proper statistical reporting.

c. Many sorts of derived statistics may have to be prepared, if not already available, in such areas as: (1) the instructional program -- scope of course offerings, average size of classes, percentage of small classes, student-credit-hour production per faculty member, etc.; (2) unit cost data for many different kinds of operations; and (3) space utilization data.

d. The generation of an adequate file of statistics about the institution may be one of the most valuable by-products of the planning enterprise.

C. If the college or university has had an effective program of institutional research over a period of years, many of the studies that have been done will likely prove of value in the planning process. These completed studies should be reviewed in order to discover what contributions they may make to the problems encountered in the planning.

D. New studies will doubtless have to be undertaken by the office of institutional research in order to provice information needed in the planning. Several types of studies may be involved, such as:

1. The systematic collection of opinions and attitudes of groups affected by the institution's operations.

a. Questionnaire forms may have to be developed.

b. The possibility of IBM tabulation must be considered.

2. The collection of comparable data from similar institutions, or from institutions now similar in size to what this college or university expects to be in 10 years.

3. Sound projections of past trends.

4. Evaluative studies comparing results of different procedures or methods, e.g., changes in admission requirements, or changes in policies on instructional loads of faculty members, or optimum size of enrollment for maximum efficiency.

E. The office of institutional research should serve as a source of reference concerning available studies, from other institutions, that would have a bearing on the planning.

1. Usually institutional long-range plans are not published, but

some can be obtained on personal request or borrowed, and studied with profit.

2. Some sorts of research studies do not need to be repeated in every institutional planning program.

a. Examples would be the effectiveness of television as an instructional medium, or the relation of class size to student attainment in courses.

b. The institutional research office should be familiar with sources of definitive studies on such questions.

F. The institutional research office should be responsible for the design of all studies set up in the planning project, even though some of the studies may actually be carried on by other agencies in the institution.

Responsibility of Institutional Research Office

It is my conviction that the institutional research office should not bear the responsibility of directing the long-range planning; instead the office should be a facilitating agency, helping those that are deeply involved in the planning, and seeing to it that sound methods and techniques are used in assembling and interpreting the data used in planning.

INSTITUTIONAL RESEARCH AS A BASIS FOR PLANNING LARGE PRIVATELY CONTROLLED INSTITUTIONS

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OUR PURPOSE here today is to focus attention on the problems and issues associated with the general topic of institutional research as a basis for planning in large privately controlled institutions. This suggests three major dimensions which set the limits of our discussion. The first is planning. What is planning? For our purposes it will be examined as a major aspect of the administrative process. Others include organizing, staffing, directing, coordination, and control. In this context, planning is the sketching in broad outline the things that need to be done and the methods for doing them to accomplish the purpose set for the enterprise. Fayol, the famous French industrialist, used the term "Prévoyance," which means to study the future and arrange the plan of operations.[1]

Fayol's "Prévoyance" introduces the second dimension of our topic under discussion today. Institutional research as it relates to planning focuses particularly on that part of Fayol's definition of planning dealing with the study of the future. In general terms, "institutional research consists of studies and investigations focused on current problems and issues in institutions of higher education."[2] It also consists of studies and investigations of problems and issues that are basic to long-range planning or that may ultimately have implications for institutional operations.[3] It is the latter aspect of institutional research with which we are concerned today. Planning must be based on facts, but facts are available only about the past and the present, and as every institutional research officer knows, even these facts prove elusive. Nevertheless, planning requires a systematic and comprehensive knowledge of the past and present. Planning also requires a set of assumptions about the future. The accuracy of these assumptions in large measure is based upon the extent to which they are supported and validated by a knowledge of the past and present.

The third and final dimension of our topic consists of defining the universe or the setting under which planning takes place. Our universe is limited to large private institutions of higher learning. Even so, our universe is a large and diverse one. At the risk of over-simplification, it is useful to formulate the central characteristics of a theoretical model of a large private urban institution.

1. It is a university, not a col-

lege.

2. It is urban based.
3. It is located east of the Mississippi River and north of the Mason-Dixon line.
4. It has a limited endowment and relies on tuition and fees to meet the bulk of its general and educational expenses.
5. At one time it was church-related, but its religious ties are now loose and in large part minor ones.
6. It has difficulty plotting its future role and direction. There is question of whether it should limit its enrollments and strive to upgrade the quality of its student body or should expand its enrollments to meet the needs of the rapidly growing metropolitan population. Unlike state universities, Ivy League institutions, and private liberal arts colleges, it has no model of excellence which it can strive to imitate.
7. It is plagued with financial difficulties. It faces stiff competition for additions to its endowment. Even state universities are turning increasingly to non-governmental sources for support. Foundation support is limited largely to "pump priming" and projects of an experimental nature. Federal aid will help but may not be of sufficient magnitude and available soon enough to contribute significantly to the solution of its immediate fiscal ills. Continued tuition increases only compound its problems.
8. It has a space problem. Its urban locale makes land acquisition and capital construction expensive. Thus, it faces immediately the problem of devising ways of developing high degrees of space utilization under far from ideal conditions.

Thus far, an attempt has been made to define and delimit the dimensions of the topic under discussion. Within this framework, let us now turn to specific examples of how institutional research has or can be the basis of planning in large private institutions.

The first illustration is found in Exhibit A and is an attempt to suggest a format for forecasting some of the problems to be faced by Boston University during the decade of the 1960's. It was prepared in the Spring and Summer of 1960 by the Director of Institutional Studies for the Vice President of Academic Affairs. In addition to forecasting the future, the illustration suggests steps that might be taken to control the future of the University through a series of planned courses of action based upon more intensive studies of the enterprise.

Exhibit B shows a study in depth of how to treat one of the problems identified in the above illustration. It suggests a methodology for increasing faculty salaries without increasing total instructional expenditures. In Exhibit B, College A serves as an illustration of a typical college in a large private university. College A_1 shows the extent to which faculty salaries can be increased by limiting the number of associate and full professors to 40 per cent of the total instructional staff. In all other respects it has exactly the same characteristics as College A. College A_2 illustrates the level of faculty salaries possible if enrollment is increased from 1,500 to 2,000, but faculty size and all other characteristics of College A are held constant. College A_3 shows the increase in faculty salaries possible if the enrollment is increased by one-third and the proportion of senior faculty is held to 40 per cent of the total faculty, but all other characteristics of College A are held constant. The three variations in the format for College A (A_1, A_2, and A_3) all suggest ways of increasing faculty salaries at all ranks without increasing the total budget of the college. College A_3 shows the greatest increase. For example, the mean salary for full professors would be $16,002, a $5,565 increase over the mean salary at the full professor level for College A.

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EXHIBIT A

BOSTON UNIVERSITY AND ITS FUTURE

A Profile for the 1960's

June, 1960

1. Institutional orientation

Academic Programs:	Focus on present programs in which substantial and/or unique contributions already are being made.
Students:	Major focus on the New England region. Lower ratio (necessarily) of commuting students; and higher ratio of residential students.
Climate:	Urban orientation, emphasis on urban setting and resources. Meeting needs and drawing upon resources of metropolitan area.

2. Student body

A projected enrollment by 1969-70 of 12,681 full-time and 11,200 part-time students. This represents a full-time increase of 2,241, a part-time increase of 3,230. It would mean a total enrollment of 23,881--a full-time equivalent of 15,481. A much higher enrollment, and of quality students, could be attained, particularly in liberal arts programs. But this in turn would require more physical plant, more faculty, and related costs. This profile study is addressed to how we can cope with clearly foreseeable enrollment and costs.

3. Capital plan additions firmly planned or contemplated

Instructional	Residential Housing (self-liquidating)	Other
Law-Education bldg.	For 2500, Charles River Campus	Field House
Library		Student Union
Graduate Center	At Medical Center, for 400	
CBS (Renovation of MDES bldg.)		
CIT (Sell airport facilities, relocate wholly on Charles River Campus)	Faculty and married student apartments, 200 units, Charles River Campus	
Medical School Instruct. bldg.		

Enrollment projected can be accommodated in presently planned space (but not with presently budgeted faculty) through more effective utilization, issuing in part from Schedule Committee and resource utilization studies.

4. The fiscal problem: a $14,728,000 gap by FY 70?

While there are other challenging problems, chief of which is continuing to improve the quality and conditions of instruction and research, the fiscal problem is the over-riding one. The enrollment projected above will require an additional (over 1960-61) 110 faculty members, assuming present student-faculty ratio is maintained. Given this size student body for 1969-70, and if unrestricted expenditures continue to increase at the same rate as in the past five years, the unrestricted budget of the University will by FY 70 total approximately $39,000,000.

Without significant increase in unrestricted income, the gap in 1969-70, between unrestricted income and unrestricted expenditures, would be $14,728,000. This assumes FY 62 tuition levels, but an enrollment of 15,481 full-time equivalent students.

5. How to fill the "gap"? Various alternatives present themselves. Their combined use will be necessary. All require careful assessment and planning. Among them are the following:

   A. By tuition increases? Certainly tuition will need to go up some. But if tuition is relied on as the means of filling the gap, the annual tuition for FY 70 would have to be $2,000, in contrast with today's $1,150.

   B. By public monies?
   Boston City? Entirely improbable.

   States (especially Massachusetts)? Logical but unlikely. But a program should be developed and pushed, regionally. On direct state aid, fiscal health, church-state factors, etc., make prospect negative.

   Federal? A strong resource possibility. For example, if HR 7215 (which includes one-third matching grants for academic facilities, and loan provisions also) is enacted, it could mean that the University's budget allocation of $1,000,000 per year for help in high-rise construction and other plant needs could be redirected toward helping meet the gap.

   C. By alumni and other private giving? It is to be hoped a substantial increase will be seen in the 60's. Prediction difficult.

   D. By internal reassessment and retrenchment? Hard as it is to face up to, this represents one of the major resources in helping to meet the gap. It requires comprehensive, sympathetic and telling review of the allocation across the University of presently available funds and, where warranted, a revision in allocations to insure optimum effectiveness in terms of the University's major objectives.

6. General funding plan

Table No. 1 attempts to rough out a translation of some of the actions suggested above into a working plan. It is an illustration only and needs adjustment, refinement. Useful in this planning would be adoption of general guidelines, for example:

-Budget income and expenses from same point of view - BU educational objectives.
-Devote any tuition increases to faculty salaries and academic programs.
-On general compensation increases, explore channeling some into non-taxable benefits.

TABLE NO. 1

ILLUSTRATION OF A GENERAL FUNDING PLAN

(Some among possible steps to help close the "Gap" between unrestricted income and expenditures)

The "Gap," if unrelieved, by FY 70. . . . . $14,728,000

Steps		Annual Savings (FY 70)	"Gap" reduced to:
1. Increase tuition, between FY 63 and FY 70 to $1,500		$5,845,621	$8,882,379
2. Adjust non-academic expenditures except auxiliaries and $1,000,000 for capital plant reserve as follows:			
a. Hold to FY 62 level	$ -5,309,988		
b. Trim or eliminate selected non-essential activities Net reduction of 10% below FY 62 level (not a 10% across-board reduction)	- 634,949		
c. Allow 3% net annual increase for salaries and increased cost of supplies & services	+1,264,903		
d. Net savings		4,680,034	4,202,345
3. Adjust academic expenditures as follows:			
a. Hold to FY 62 level	-7,874,775		
b. Trim or eliminate selective programs by Net of 10% below FY 62 (not a 10% across-board reduction)	-1,002,126		
c. Additions to faculty and student enrollment increase	+1,368,620		
d. Allow 5% net annual increase for salaries and increased cost of supplies & services	+4,948,194		
e. Net savings		2,560,087	1,642,258

TABLE NO. 1 continued

ILLUSTRATION OF A GENERAL FUNDING PLAN

Steps	Annual Savings (FY 70)	"Gap" reduced to:
4. If federal matching facilities, aid, and loans become available, redirect $1,000.000 tuition income set aside for plant improvement to operating costs. Use development resources to help fund BU share of plant improvement	$1,000,000	$ 642,258
5. Increase development activities, alumni, and other private giving	642,258	-0-

6. Other growth related and much needed quality improvement items not included above:

   a. Expanded non-academic supporting items to handle larger student body (student aid, student personnel services, etc.)
   b. Increase development administrative costs to enable expanded private giving (cf. items 4 and 5 above)
   c. Increase Summer and Division of Continuing Education salary rates to make them comparable to regular base salary rates.

   d. Improve quality of instruction in present programs
   e. Provide University support for research activities
   f. Place more emphasis on salary improvement (cf. 2c and 3d above)

EXHIBIT B

THE EFFECT OF FACTORS OF STUDENT-FACULTY RATIO AND FACULTY RANK ON FACULTY SALARY SCHEDULES

COLLEGE "A"

Enrollment: 1500 full-time (or equivalent) students
Income: $1,500,000 (allowing for scholarships, tuition remission, etc.)
Faculty: 100 full-time (or equivalent) in all ranks
Faculty-student ratio: 15 to 1

Allowing 40% income for University overhead: building, central administration, etc., the budget allowance for College "A" would be $900,000 ($1,500,000-$600,000). Of this amount, $800,000 is available for faculty salaries. (This college is neither subsidized or subsidizes other schools and colleges in the University.)

	Tch.Fell.,etc.	Instr.	Asst.Prof.	Assoc.Prof.	Professors	Total
Full-time Equiv.	10	10	20	30	30	100
Percentage	10%	10%	20%	30%	30%	100%
Salary ratio	1	1 1/3	1 2/3	2	2 1/2	
Total units per rank	10	13.33	33.33	60	75	191.66
Average salary	$4,175	$4,567	$6,959	$8,350	$10,437	

COLLEGE "A_1"

Enrollment: 1500 full-time (or equivalent) students
Income: $1,500,000 (allowing for scholarships, tuition remission, etc.)
Faculty: 100 full-time (or equivalent) in all ranks
Faculty-student ratio: 15 to 1

Allowing 40% of income for University overhead: building, central administration, etc., the budget allowance for College "A_1" would be $900,000 ($1,500,000-$600,000). Of this amount, $800,000 is available for faculty salaries. (This college is neither subsidized or subsidizes other schools and colleges in the University.)

	Tch.Fell.,etc.	Instr.	Asst.Prof.	Assoc.Prof.	Professors	Total
Full-time Equiv.	15	25	20	20	20	100
Percentage	15%	25%	20%	20%	20%	100%
Salary ratio	1	1 1/2	2	2 1/2	3	
Total units per rank	15	37.5	40	50	60	202.5
Average salary	$4,444	$6,666	$8,888	$11,110	$13,332	

COLLEGE "A_2"

Enrollment: 2000 full-time (or equivalent) students.
Income: $2,000,000 (allowing for scholarships, tuition remission, etc.)
Faculty: 100 full-time (or equivalent) in all ranks
Faculty-student ratio: 20 to 1

Allowing 40% of income for University overhead: building, central administration, etc., the budget allowance for College "A_2" would be $1,200,000 ($2,000,000-$800,000). Of this amount, $1,080,000 is available for faculty salaries. (This college is neither subsidized or subsidizes other schools and colleges in the University.)

	Tch.Fell.,etc.	Instr.	Asst.Prof.	Assoc.Prof.	Professors	Total
Full-time Equiv.	10	10	20	30	30	100
Percentage	10%	10%	20%	30%	30%	100%
Salary ratio	1	1 1/3	1 2/3	2	2 1/2	
Total units per rank	10	13.33	33.33	60	75	191.66
Average salary	$5,635	$7,513	$9,391	$11,270	$14,087	

COLLEGE "A_3"

Enrollment: 2000 full-time (or equivalent) students
Income: $2,000,000 (allowing for scholarships, tuition remission, etc.)
Faculty: 100 full-time (or equivalent) in all ranks
Faculty-student ratio: 20 to 1

Allowing 40% of income for University overhead, building, central administration, etc., the budget allowance for College "A_3" would be $1,200,000 ($2,000,000-$800,000). Of this amount, $1,080,000 is available for faculty salaries. (This college is neither subsidized or subsidizes other schools and colleges in the University.)

	Tch.Fell.,etc.	Instr.	Asst.Prof.	Assoc.Prof.	Professors	Total
Full-time Equiv.	15	25	20	20	20	100
Percentage	15%	25%	20%	20%	20%	100%
Salary ratio	1	1 1/2	2	2 1/2	3	
Total units per rank	15	37.5	40	50	60	202.5
Average salary	$5,334	$8,001	$10,668	$13,335	$16,002	

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INSTITUTIONAL RESEARCH AS A BASIS FOR PLANNING: SMALL PRIVATELY CONTROLLED INSTITUTIONS

James L. Miller, Jr.
Associate Director for Research
Southern Regional Education Board

THE TOPIC of this session, "Institutional Research as a Basis for Planning: Small Privately Controlled Institutions," suggests at least three different subtopics: (1) the present status and condition of institutional research in this country, (2) the role of institutional research in planning, and (3) the ways in which institutional research may be different in institutions that are small and private. In my presentation this morning, I propose to deal with each of these, but I will try to give emphasis to the third. We will hear a good deal in the next two days about institutional research in general and about a number of specific functional topics which are the subject of institutional research, but this session and the "clinic" on Tuesday afternoon will be our only opportunities to consider the ways in which institutional research in small private institutions may have its own peculiar problems or potentialities. Therefore, I think we should take full advantage of the time we have this morning to concentrate on that specific topic.

Current Status of Institutional Research

First, I will comment briefly on the current status of institutional research in general. Institutional research is a new field which has had a remarkable growth during the 1950's and early 1960's. To my mind it is approaching the first stages of professionalization. My reasons for asserting this are that we are beginning to see a group of people who identify themselves rather self-consciously as institutional research officers and who identify themselves only secondarily with whatever disciplinary fields they came from originally. Other reasons for thinking that institutional research is in the early stages of professionalization are that we are beginning to see a body of literature on the subject, a generally accepted group of "core functions" and an accepted methodology for carrying out some of these functions.

Institutional research has a long way to go before it can call itself a fully developed profession (or subprofession) but it has arrived at a first plateau along the way. From that first plateau, one can look back and see the ground that already has been covered. I think that the biggest accomplishment is that methodology has been devised and disseminated for collecting a good deal of the most basic kind of planning and management data. In many colleges, this whole process has been sufficiently institutionalized that it now proceeds without much fuss or bother. I am referring to the collection and analysis of basic information about student enrollments and the projection of student enrollments, space utilization, faculty load, institutional production in such terms as student-credit-hours, unit costs, etc. I am not implying that all of the methodological questions have been solved in these areas, nor do I mean that all or even most American colleges systematically collect and analyze this kind of information. I do mean, however, that a basic literature concerning each of these areas exists and that there is a systematic procedure for dealing with many of them which is followed in a substantial number of institutions. Therefore, these are no longer "frontier" areas. Institutions which are just beginning studies in these areas today do not find it necessary to devise their own methodology but instead can refer either to the literature or to an experienced institutional research officer to learn an established methodology.

Several other areas are beginning to gain acceptance as appropriate topics for institutional research. These include the study of students, in which a good deal of work has been done recently; the study of the constituency which individual colleges serve or might serve; and the study of over-all collegiate environments, usually referred to as the college climate. There even has been a beginning at the systematic study of the faculty.

As the field of institutional research leaves its infancy and begins to develop and mature, the differentiation becomes clearer between institutional research on the one hand and the more general study of higher education as a social institution on the other. The key basis for distinguishing between the two relates to the purpose for which the research is undertaken. Academic research about higher education is basic research and serves the same purpose as does all other academic research--it increases man's knowledge about himself and the world, physical and societal, in which he lives. It may be carried on in academic departments like sociology, psychology, economics or political science, or in one of the new interdisciplinary centers for the study of higher education such as those at Berkeley, Ann Arbor, and Teachers College.

The outstanding characteristic of academic research about higher education is that it is done primarily for the purpose of learning more about one of man's important social activities rather than to help solve the administrative or managerial problems of any one particular college or university. Institutional research, on the other hand, is applied research. It is an administrative tool. It assists the decision-makers within a particular college or university to do their jobs more effectively because it provides them with information which is directly relevant to the particular problems which they face. The line between applied research and basic research admittedly is fuzzy; but if one looks, not at the borderline cases, but at the extremes, it is readily apparent that the distinction is real. Institutional research and academic research about higher education are like first cousins; they are different but related.

Having suggested this distinction between institutional research and academic research, two further comments may be in order. One is that this distinction between the two does not mean that there will be no overlap. Some of the basic contributions to our knowledge about the higher education enterprise may be made on occasion by offices of institutional research and, by the same token, academic departments within an institution may from time to time be willing and able to make significant contributions to campus projects which are essentially institutional research.

The second comment has to do with the institutional research officer himself. The institutional research officer, especially if he is good, cannot avoid being half fish and half fowl--that is, half administrator and half faculty member. This grows out of the requirements [illegible] job itself. An institutional [illegible] officer must have certain [illegible] of a good faculty member [illegible] catholic curiosity, a good [illegible] and a respect for thorou[illegible] also have certain of the [illegible] of a good administrator, including a belief that knowledge is most valuable when it can be applied in a meaningful way and the ability to identify those problems which at the moment are susceptible to treatment. The fact that the institutional research officer is a hybrid often will be annoying both to administrators and to faculty members, but it is precisely the thing that makes him valuable to the institution. One device for alleviating this fish or fowl dilemma is the use of an advisory committee on institutional research which is made up of both faculty and administrative representatives. Such a committee also can be the source of some excellent guidance and advice for the institutional research office.

Role of Institutional Research in Planning

My general comments about the second sub-topic--the role of institutional research in planning--will be brief, but I will come back to this topic later as it relates specifically to institutional research in small institutions. In general, I think it is sufficient before a group like this simply to assert that, due to such factors as rising enrollments, rising costs, and the explosion of knowledge, our colleges are under greater pressure than they have ever been before in their history. This fact makes effective institutional planning an absolute necessity. Effective planning cannot be done without information, and the task of the institutional research office is to provide the needed information.

An institutional research office must gather, analyze, and interpret basic information about the institution in which it is located. In order for this information to be really meaningful, the institutional research office also must have normative data in the form of information about other institutions and about national and regional averages. The subjects about which an institutional research office must provide information are extremely varied and include collegiate organization and management, curriculum, faculty, students, physical facilities, and the constituency which the institution serves.

The simple recitation of subjects about which information must be gathered indicates the size of the task. In any institution, large or small, it can be accomplished only by taking full advantage of every possible legitimate short-cut. Whenever possible, the institutional research office must take advantage of the information already being collected by other administrative offices on the campus, and when new types of information are to be gathered, this needs to be done in such a way that it can also serve the needs of other college offices. For example, information about students and student credits can be gathered cooperatively with the registrar; information about faculty and faculty loads can be gathered jointly with the dean.

The institutional research officer also must conserve his own time and energy by making full use of the work done by people in other institutions who are studying higher education, especially other institutional research officers. From them, he can learn a great deal that will help him decide which studies he can most profitably undertake in his own institution, how much time and effort they may require, and even the methodology which should be followed to produce the best information with the least effort. For example, it is a complete waste of time for an institutional research officer to ignore the literature and devise for himself a procedure for making a space utilization study or a faculty load study. Others already have made many of the mistakes, and on the basis of that experience devised several alternative methodologies and put these into the literature. An institutional research officer would be justified in working on new procedures in these areas only if, after becoming familiar with the existing literature, he thinks he can improve upon these procedures or develop better ones. One further short-cut involves the identification of studies which do not need to be replicated on every campus. Examples of this which come to mind readily are the innumerable studies of the effect of class size on learning.

Differences in Institutional Research in Small Private Colleges

The third sub-topic to which I want to give attention, and the one which I consider most pertinent to this morning's session, is the way in which institutional research may be different in a college which is small and private. I think there are a number of ways in which institutional research in small private institutions is different from institutional research in other institutions. Some of these differences are, at least potentially, advantages and some are disadvantages. The fact that these differences exist does not mean that institutional research in small private institutions is outside the main stream of institutional research *per se*; nevertheless, they are important enough that an awareness of them is essential if a significant institutional research job is to be done in small private institutions.

Lest there be any misunderstanding, let me preface my remarks about the factors which differentiate small private institutions from other colleges and universities by saying that I do not think all small private institutions are alike. We are plagued by stereotypes and cliches about small colleges, some of which suggest that these institutions are necessarily good and some suggesting the opposite. The simple fact is that there are approximately 1,250 colleges in the United States which have an enrollment of less than 1,000 students. This is over 60 per cent of the total number of colleges and universities in the country. The diversity among small institutions probably is greater than among any other single classification. Any public relations officer who tries to sell the idea that a small college is *ipso facto* a good college is engaging in charlatanism and, by the same token, anyone who assumes that a small institution necessarily is inferior is sufficiently uninformed to have earned the label "stupid."

Despite their diversity, however, small colleges share certain characteristics which, on the one hand, open to them certain possibilities for development and, on the other hand, preclude certain other possibilities.

Size of enrollment is the obvious way in which small colleges differ from other institutions. Less obvious but equally significant are the innumerable other differences which stem, directly or indirectly, from a limited enrollment. It limits the number of classes that can be offered, and indirectly it limits the number of faculty members who are employed, the specializations of these faculty members, the number of administrative staff members and their specializations, the number of buildings on the campus, the financial resources of the college, and, if the college has them at all, the size of the research program and of the community service activities. Not all of these limitations are a necessary outgrowth of a small enrollment, but they generally are correlated with it.

Smallness offers certain opportunities and it imposes certain limitations. Let us look first at the limitations. A small college does not have the resources to offer a wide variety of courses and activities from which the student may choose--at least not in the sense that these are available to students in a university. The number of students in a small college only can be divided among a limited number of separate classes before individual class enrollments become too small for effective education let alone efficient operation. Furthermore, the number of faculty members also is limited in a small college, and if a large number of courses is offered it usually is accomplished by overloading this limited faculty. The effect of this overloading, of course, is to drive away the good faculty members who are sincerely interested in doing a good job of teaching or in using their free time for research or writing. Finally, the financial resources of most small colleges are limited, and it is easy for the small college to exhaust most of these resources simply in paying the costs of teaching a large miscellaneous array of courses. All of this suggests that the small college is severely limited in what it can undertake and, therefore, must plan carefully if it is to be successful. Delimitation becomes a necessity--delimitation of purposes, objectives, curriculum, and staff.

What are the advantages which smallness offers? The most significant of these is the potential advantage--I emphasize the word "potential"--of institutional unity. The small college has the ability, because of its smallness, to decide upon a single set of institutional objectives and build a total collegiate environment which promotes these objectives through every facet of a student's life. It has become abundantly clear that the student learning which takes place on a college campus is a result of much more than simply the classroom experiences. The out-of-class experiences are equally important, both for what they contribute in and of themselves and also for the effect which they have on the student's receptivity to and use of his classroom experiences.

A small institution, at least potentially, has the ability to weld the faculty, the administration, and the student body into a single, manageable environment, designed to promote the particular objectives which the institution has adopted as its own. Jacob's review of the studies of student values indicated that the few colleges in this country which have been particularly successful in affecting students' values, attitudes, and ambitions have been small institutions which did precisely this. Very few small colleges actually have succeeded in creating a genuinely distinctive educational environment. Nevertheless, the potential is there and I would point to it as probably the most important single advantage which a small institution has over other institutions.

A major effort by a college to create a unified climate for learning of this type involves all phases of the college's operation and, therefore, it must involve nearly all members of the college community. It involves basic questions of college organization and finance, of curricular content and structure, of teaching methods, of extracurricular life, of faculty selection and development, and of student selection (which may be a matter of direct selection by the college or of student self-selection based upon the image which the college creates). Most important of all, it involves questions of the institution's basic purposes and objectives, although the general campus community may come to realize their importance only after they see some real evidence of the immediate relevance of the college's stated objectives to some of the other areas I have just mentioned. The reason for this is simply that most faculty members have never worked in a situation where the institution's stated purposes and objectives had a direct relationship to campus decision-making.

The stated purposes of most American colleges and universities are sufficiently vague that the institution's *real* purposes can be determined only on a behavioral basis. In most cases the average faculty member, administrator, and even student finds himself in a laissez-faire situation where he can operate pretty much as he chooses in selecting the collegiate purposes and objectives he will assume to exist or seek to foster.

A laissez-faire atmosphere is not necessarily bad; it offers many of the advantages which are associated with freedom and permissiveness. However, it also carries with it the disadvantages associated with a lack of agreed purpose and a lack of real planning. Each faculty member and student is free to assume his own institutional goals and do his own work as though these were being shared and promoted by the rest of the institution, but in fact they may not be--a situation which results in ineffectiveness and frustration. Some institutions would calculatedly choose a laissez-faire atmosphere as a preferable alternative to any planned set of institutional purposes; but most institutions have not *chosen* to be laissez-faire, they have simply drifted into it. Institutional purposes and objectives become important if and when a college decides to develop a unified educational environment designed to produce educational outcomes which reflect a set of stated institutional purposes and objectives.

The potential ability of a small college to shape its own destiny has been discussed in several recent and important publications. Two of these which lay emphasis on the educational implications of this question are the chapter in Philip Jacob's book on *The Changing Values in College* titled "The Peculiar Potency of Some Colleges," and the chapter in Edward Eddy's book *The College Influence on Student Character* titled "The Effect of Environment." Three others which have stressed the economic necessity for severely delimiting the stated purposes and objectives of a small college and then initiating extensive curricular reforms to effectuate them are the Beardsley Ruml-Donald Morrison volume *Memo to a College Trustee*, Earl McGrath's *Memo to a College Faculty Member*, and Sidney Tickton's writing on *A Ten-Year College Budget*.

I have emphasized this potential ability of small colleges to re-shape themselves into institutions with sharply delimited objectives and a unified educational environment that is deliberately designed to carry out those objectives because I think an increasing number of small colleges, especially small private colleges, will be moving in that direction in the next few years. The institutions that do so may never constitute even a majority of all the small colleges in the country, but if the past is any guide, they will constitute the most exciting group of small colleges and, therefore, they merit special attention.

Function of Institutional Research Offices

The function of the institutional research officer in *any* institution is to collect, analyze, and make available information which will assist in the effective operation of the college. This is true regardless of whether the college is engaged in the kind of soul-searching I have been discussing for the last few minutes. The kinds of information which are most needed at any particular time will vary from one college to another. In a college that is engaged in soul-searching, the need probably will be heavier on the side of studies of students, educational outcomes, and curriculum than would be true in other colleges. All institutions also need studies of space utilization, faculty load, costs and other topics related more specifically to institutional organization and management.

Institutional research in a small college is affected by the fact that the entire operation almost inevitably is small in terms of staff and financial resources. In almost every case, the institutional research officer in a small college has come to his position without previous training or experience in institutional research and, therefore, he is largely self-trained. If that self-training is to be good training, he needs a large enough budget to assemble a working library on the subject, to travel to meetings such as this one, and occasionally to visit other institutions where projects of interest to him are underway. He needs the backing of the college administration and he needs the understanding of the faculty. A device which will help to gain both is a campus advisory committee on institutional research representative of both the administration and the faculty. He needs adequate clerical assistance and office machinery. And, in a small college, it is especially important that the institutional research office make the fullest possible use of the work of others, the talents and interests of faculty members within the college itself, and the published reports of studies done in other institutions.

In a few situations, it has been possible to set up cooperative institutional research projects among groups of small colleges. This permits the colleges, and their institutional research officers, to divide the workload and, even more important, to share ideas, share information, and benefit from an interchange among peers that is extremely helpful to the professional development of each of the institutional research officers involved. In Alabama, a series of such inter-institutional projects was developed which centered on Auburn University and permitted the cooperating small colleges to draw upon the university for technical assistance. This kind of development seems particularly promising.

In summary, I would say that institutional research in its short history as an identifiable field of specialization has made considerable progress. The need for institutional research will grow rapidly because the pressures of mounting enrollments, tighter financing, and the explosion of knowledge in our time make institutional planning an absolute necessity. A prerequisite to such planning is adequate information, and the collection and analysis of such information is the function of institutional research.

Small colleges have a special need for careful planning because of their limited number of students and faculty and often because of limited finances as well. In an increasing number of small colleges, the positive side of this situation will be emphasized through the development of clearly delimited programs which are calculatedly designed to produce educational outcomes more consistent with the institution's stated purposes and objectives. In those colleges, institutional research can contribute to the development of such programs in the same way it contributes to the effective management of the institution in general--by providing the background information which is needed for effective decision-making.

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PRE-ADMISSIONS EVALUATION AND COLLEGE SCHOLASTIC PROGRESS PATTERNS

John R. Hills
Director of Testing and Guidance
University System of Georgia

I AM both honored and pleased to be with you this afternoon to talk about some of our studies of college students. In Georgia we are doing some things that do not seem to be too common elsewhere. I hope that you and the discussants will call to my attention new and better procedures for us to apply and that you will pinpoint still other problems which should no longer be overlooked.

I feel a need to say a little about the organization of higher education in Georgia in order to provide a context for my later remarks. All twenty publicly-supported institutions of higher education in Georgia are organized into one University System and are controlled by one Board of Regents. These are fifteen men, appointed by the Governor for staggered seven-year terms of office. The Board has a full-time staff, including a Director of Testing and Guidance with a System-wide responsibility.

Included in the twenty institutions or units are the University of Georgia and Georgia Tech at the university level; four fairly standard liberal-arts colleges; a college for women; a military college; three Negro liberal-arts colleges; three urban, community colleges; four rural, residential junior colleges; a technical institute; and a medical college. Since none of these institutions has had an active institutional research program (except, recently, Georgia Tech), the comprehensive study of University System students has been done in the Regents' Office of Testing and Guidance. One virtue of the centralized organization is the communication between units and across the whole State that is thereby made possible.

Just as there are two topics in the title of this paper, my remarks are organized into two parts: (1) Pre-Admission Evaluation and (2) Scholastic Progress Patterns. Under each topic I will emphasize the methods we use, showing how they sometimes result in findings of interest. Since I have gathered that you are a sophisticated audience, I will assume that you are familiar with the common statistical techniques and methods. I hope that some of you may have procedures to recommend to me which will improve on those that we now use.

Pre-Admission Evaluation

Turning to the first topic--as I think about the evaluation of students concerning admission to college, the process starts in the high school, if not sooner. Whoever counsels with a high school student faces with him the question of whether he should go to college. In Georgia they tell me that years ago a method of vocational counseling of very young children was perfected. There were not many occupations then, so a simple technique was adequate. You placed a young boy into a room which had nothing in it but an apple, a silver dollar, and a Bible. You watched to see what caught the boy's attention. If he picked up the dollar, he would be a banker. If he went to the apple, he would be a farmer. If he showed interest in the Bible, he would be a preacher. If he sat on the Bible, ate the apple, and put the dollar in his pocket, he would be a politician.

Regression Analysis

It is not so easy any more. College enters the picture, and the student asks, "Which college?" For a counselor consistently to supply other than misleading information, he has to have accurate, current data from the colleges. He needs prediction data, from multiple regression analysis. If you asked me what technique or method we rely on most heavily, I would say without hesitation that it is some form of regression analysis. Basically, we analyze the data from the entering classes at each institution to determine how test scores and school performance can best be used to predict college grades.

As you can imagine, with a score of institutions we do a lot of regression analyses each year. For that matter, a counselor helping a student decide which college to attend has to deal with a number of prediction equations. So we seek simplicity and efficiency. This results in our obtaining our regression analyses as byproducts of analyses of covariance, rather than directly. You see, we know that quite often different prediction procedures are necessary at the same institution for students of different sex. However, sometimes a single regression system will suffice for both sexes. This, then, usually becomes our first question, "Can we use one formula for both boys and girls?" (Sometimes, as at the University of Georgia, for each sex we first ask whether the same prediction equation can be used regardless of what school of the University a student enters. Currently, the answer is that the school of entry does not matter for the purpose of predicting freshman grades.)

Analysis of Covariance

To answer the question about sex differences in prediction, we use analysis of covariance as formulated by Gulliksen and Wilks in their 1950 Psychometrika article. They provide a procedure for evaluating whether the same regression obtains in several samples. We have a computer program available which makes this evaluation, provides the relevant regression equation or equations, and tests the significance of the regression weights. Use of this procedure sometimes allows us to combine sexes. It often allows us to combine successive classes of entering students, but not always. Covariance analysis has revealed that size of high school is not a significant factor in academic success in the first year at Georgia Tech, that adjustment of predictions according to the particular high school from which a student enters Columbus College is fruitless, that similar adjustments at the Medical College of Georgia are not worth the trouble, and so on. This is a very handy technique to have at your disposal.

Simplifications

The test of significance of regression weights is a nice feature. We used multiple regression analysis a few years ago to decide whether we could improve prediction by adding more test scores as predictors. Our basic test scores come from the College Board's SAT, a Verbal and a Mathematical score. We ordinarily get pretty good prediction from the SAT and the high school average. The multiple correlations for the University System average around the mid-.60's from year to year. However, we added the STEP series of achievement tests, some of the Cooperative Achievement Tests, and from time to time, a variety of other tests such as the Otis and the Bennett, and consistently we found little improvement in prediction accuracy considering the time and effort involved. This being the case, it was obvious to question whether we even needed both the V and the M score from the SAT. It turns out that often we don't; often the second test score improves the multiple correlation by less than .015, an arbitrary, practical criterion we used before the availability of the current analysis of covariance program. So we simplify things in another way, by omitting predictors which are not contributing significantly. A two-predictor equation is easier for an admissions officer, or a counselor, to use.

Counselor's Guide to Georgia Colleges

As I said before, if the counselor is to be effective he has to have accurate information from the colleges. The information from a variety of colleges must be transmitted to the counselors in a form which will permit that information to be used in a counseling session. The usual prediction formula won't do, nor will an unsystematic array of data from different colleges. Our method for handling this is for one office to analyze the data from all the colleges in the State, public and private, and to publish them together in a common format, distributing the data free of charge to all counselors in the State. We call the document containing these data the Counselor's Guide to Georgia Colleges. A page of the Supplement to it has been reproduced for you in Exhibit A.

You will see that we have simplified the prediction equations in two ways. For each of the colleges, in Exhibit A, the M score for females did not add to prediction accuracy, so it was left out. We have also multiplied the entire equation through by a constant so as to have integral weights, after rounding. Then we went to the probability approach because we thought it would be the most helpful way for a student to consider predictions. It keeps the degree of prediction error before him, rather than hiding it in a predicted average grade. The details of conversion from the usual regression equation to these simplified equations and tables are forthcoming in an article in the Personnel and Guidance Journal.

Admissions Officers

The school counselor does not do all of the pre-admissions evaluation. College admissions officers also have their say. Sometimes their problems are impossible, as the time when one of our admissions officers faced the adoring mother whose wonderful son had only two problems. He just could not do well on tests, so his lowly SAT scores should be ignored. His only other problem was that it made him nervous to study.

Most of the evaluations that the admissions officer must make can be handled by procedures as simple as those used by the counselor. The same simplified equations can be used. Their accuracy is almost always within one-tenth of a letter grade. When only two predictors are used, an abac, such as that of Exhibit B, is very convenient. There you merely find the student's high school average grade on the vertical axis, follow it across to his SAT V score on the horizontal axis, and read his predicted freshman average grade from the diagonal lines. In borderline cases, one might want to refer to the full prediction equation, but this should involve only a small proportion of the applicants.

Cutoff Scores

Some of our Georgia admissions officers have the annoying problem of operating admissions on the basis of beds rather than of brains. That is, instead of admitting all students who can do the work, and no one else, they are assigned the task of admitting the best available 500, or 200, or whatever number the administration prepares for in its budget. One way to proceed is to take the first 500 who apply. Even then, more than 500 must be admitted in order to have 500 register. We think that a better procedure than first-come, first-served is to estimate a cutoff predicted grade which will yield the desired number of bodies by the time classes start. This way the most able 500 will be admitted instead of just the first 500. This procedure also tends to keep the admission season open longer. At least one Georgia college found one year that if it had started its admissions on the day it closed them, the college could have enrolled a better freshman class. There were more superior applicants after the beds were filled than before. If one wants to expend the State's educational resources on the best available raw material, it is poor management to turn away good students just because they apply in the summer rather than in the spring.

The admission officer's delicate balancing must be between having empty beds and having beds out in the halls, when he knows that not all admitted applicants will register. A little systematization of the process would not hurt. The first step is to keep track of applications from year to year. This helps one estimate in subsequent years whether applications are coming in at about the same rate as previously. (We expect an increase of 15% between Fall, 1963, and Fall, 1964.) The second step is to keep track of the predicted grades of each applicant. The third step is to note how many of the accepted applicants each year actually enter. By using a form such as Exhibit C, one can determine what per cent of applicants to accept to get the desired number of entering students. From the distributions of predicted grades of previous years' applicants, one can determine what predicted grade falls at the proper percentile point. This is a good approximation to a suitable cutoff.

Scholastic Progress Patterns

Let's turn to the second topic, Scholastic Progress Patterns.

Counting

After the student is admitted, what happens to him? It is surprising how much can be found by as simple a method as mere counting. How many students graduate four years after being admitted? Five years after being admitted? Ever? How many change their major or school? Which schools do they change from, predominantly? Which schools do they change to? How many who take remedial courses upon entry ever survive to graduate? How many of the borderline people, to whom we give a trial, ever make it to the cap and gown?

If you have not tried counting such things, you will probably be surprised and disappointed at what you find. The data I've seen seem to indicate that educational institutions are doing a lot of remedial wheel spinning. Counting can correct some of our mistaken ideas about college attendance. From data I have seen so far in the University System, it is the unusual student who enters and attends one college continuously during the school year until graduation.

Significance Tests

More complex questions require more complicated methods. One kind of question we ask is whether the weaker students tend to be the ones who fall by the wayside. At first blush that seems like a silly question. But when we look at our data, it is not so silly. Sure, the weak students drop out, but so do the strong! The class that survives is often indistinguishable in academic potential from the one that entered. But it is so much smaller! To convince *ourselves* about this, we use the usual significance tests for differences between means. To convince others, we draw graphs showing the spread of scores as well as the means.

Another method we use was presented by Thomas A. Ryan in a series of articles in the *Psychological Bulletin* (1959, p. 26-47, 1960, p. 318-328, and 1962, p. 301-305). The problem is that of multiple comparisons. If you have a number of statistics to compare, such as mean SAT V scores on five successive entering classes, or on eight different schools within an institution, and so on, repeated application of the usual significance test at, say, the 5% level will be deceptive. If you were just picking out two of the means to be compared for some hypothesis you had in mind, the single significance test at the .05 level would be appropriate. But when you make all possible independent comparisons, you *expect* five per cent of them to be significant at the .05 level, i.e., there is a 50-50 probability of getting five significant results at the .05 level. To get a *set* of data which shows at the .05 level that something other than chance is operating, you must have more than five per cent of the individual significance tests significant at the .05 level. Ryan describes a general *method of adjusted significance levels* which controls the error rate experimentwise. That is, we are able to state the probability that one or more of our conclusions will be incorrect in that we falsely claim significant differences. An example of one of our computation forms for multiple comparisons of four means is presented in Exhibit D. In conjunction with Ryan's articles, the use of the form will be clear.

Multiple correlation procedures can be used in imaginative ways to study the scholastic progress patterns of admitted students. Dr. Warren Willingham demonstrated at Georgia Institute of Technology that allowing for the trend in a student's grades during his first three quarters at Tech did not add to the accuracy of prediction of second year's grades from first year's grades. When differences between grades from quarter to quarter were introduced as additional predictors in the multiple regression analysis, the correlation was raised from .63 to .64, nothing to support the advisers' belief that "improvement" was an encouraging sign for a boy who made a poor start.

Using part correlations, Willingham showed that if one is given a freshman grade average at Tech for a student, then knowing his SAT scores, or high school grades, or the average predicted for him at Tech before entry, does not help predict subsequent grades during his career at the institution. This finding is, of course, disheartening to the adviser who would like to believe that the boy of promise who is now failing may suddenly "bloom." The data indicate that if he does not sprout promptly in Tech's atmosphere, he is not likely to sprout at all. The bag of correlational tricks can help resolve some most interesting questions about scholastic progress.

Analysis of Covariance

The analysis of covariance that was discussed earlier can also be very hand when considering questions having to do with scholastic progress patterns. One matter that deserves concern is the fact that women usually obtain better school and college grades than men of equal ability. Whether it is right or wrong that this is the case, we need to be aware of it and the extent to which it is true. In Georgia, some claim that the cause of the phenomenon is known; girls are graded on the "curves." I think that there may be other factors involved also. A friend of mine who is a very good accountant was downgraded on a paper for a class in religion in which he spelled "prophet" incorrectly each time. For him the word is "profit"! Seriously, some faculty still contaminate their evaluations of course achievement by such important but irrelevant considerations as class attendance, charm, cleanliness, conformity, decorum, docility, promptness, and punctuality. It is a matter of institutional philosophy whether such practices will be condoned, but if they are permitted they will be reflected in a handicap for the male student.

Covariance analysis will also help detect whether grading standards in an institution are floating. By that I refer to the customary finding that as the quality of the students improves through selective admission, the mean grade remains constant. I also refer to the experience of the registrar at the University of Georgia who once put all the top applicants into one section of freshman English. You can guess what he found; there were as many F's in that section as in any other. When I find floating grades, I suspect that an institution has not carefully formulated its goals and has not worked toward a careful definition of what it wants its students to achieve and a means of ascertaining when that achievement has taken place. As important as evaluation and knowledge of results are to learning, measurement of achievement is one of the weakest links in today's education.

Analysis of covariance also made it possible for us to demonstrate that requiring football players to be in a certain room for a certain time period each day and not permitting them to talk during this "study" period improved their grades significantly over what would have been expected on the basis of their ability. Findings such as that may help the institutional researcher to convince the important people on a campus that his efforts are worthwhile!

I have spent most of this time talking about methods. I was asked to concentrate on methods rather than findings. You will note, though, that there is an interplay between methods and questions, and between questions and facilities, and between all of these and the training of the researcher. Given a competently-trained researcher, the questions he asks will probably depend on whether he has available data-processing facilities of sufficient scope that it will not take him forever to analyze the data. Even with computers, a method for which a computer program is already available is more likely to be used. Of course, sometimes a question will be so interesting that a method will be found or invented, but it seems to me more often that a method will suggest a suitable question, and the discovery of a new method will bring questions to the surface that had previously been submerged. So the researcher who has the most methods at his command may appear to be the one who asks the most and the most interesting questions.

EXHIBIT A

(Adapted from Supplement to Counselor's Guide to Georgia Colleges)

Proportions of Students with Various Index Scores (Based on Formulas Using College Board Scores and High School Average) Who Will Make An Average College Grade of C or Better, B or Better, and A Their First Year.

REINHARDT COLLEGE			
FEMALES	N = 55		
INDEX V + 17 HSA	STUDENT WILL GET AVERAGE OF:		
	C	B	A
1500			.95
1400			.82
1300		.99	.56
1200		.96	.28
1100		.85	.09
1000	.99	.61	.02
900	.97	.32	
800	.87	.11	
700	.66	.03	
600	.36		
500	.14		
400	.03		

SAVANNAH STATE COLLEGE			
FEMALES	N = 128		
INDEX V + 11 HSA	STUDENT WILL GET AVERAGE OF:		
	C	B	A
1300			.99
1200			.95
1100		.99	.71
1000		.98	.31
900		.85	.06
800	.99	.52	.01
700	.93	.14	
600	.66	.02	
500	.26	.01	
400	.04		
300	.01		

SHORTER COLLEGE			
FEMALES	N 94		
INDEX V + 18 HSA	STUDENT WILL GET AVERAGE OF:		
	C	B	A
1600			.86
1500		.99	.65
1400		.96	.37
1300		.86	.14
1200	.99	.64	.04
1100	.96	.36	.01
1000	.85	.14	
900	.62	.04	
800	.34	.01	
700	.13		
600	.03		
500	.01		

YOUNG HARRIS COLLEGE			
FEMALES	N 104		
INDEX V + 29 HSA	STUDENT WILL GET AVERAGE OF:		
	C	B	A
1900			.96
1800			.90
1700		.99	.78
1600		.97	.61
1500		.91	.41
1400	.99	.80	.23
1300	.97	.63	.11
1200	.92	.43	.04
1100	.81	.25	.01
1000	.65	.12	
900	.45	.05	
800	.27	.01	
700	.13		
600	.05		
500	.02		

EXHIBIT B

Chart for the Prediction of Freshman Average Grade for Males at Columbus College from SAT V and HSA

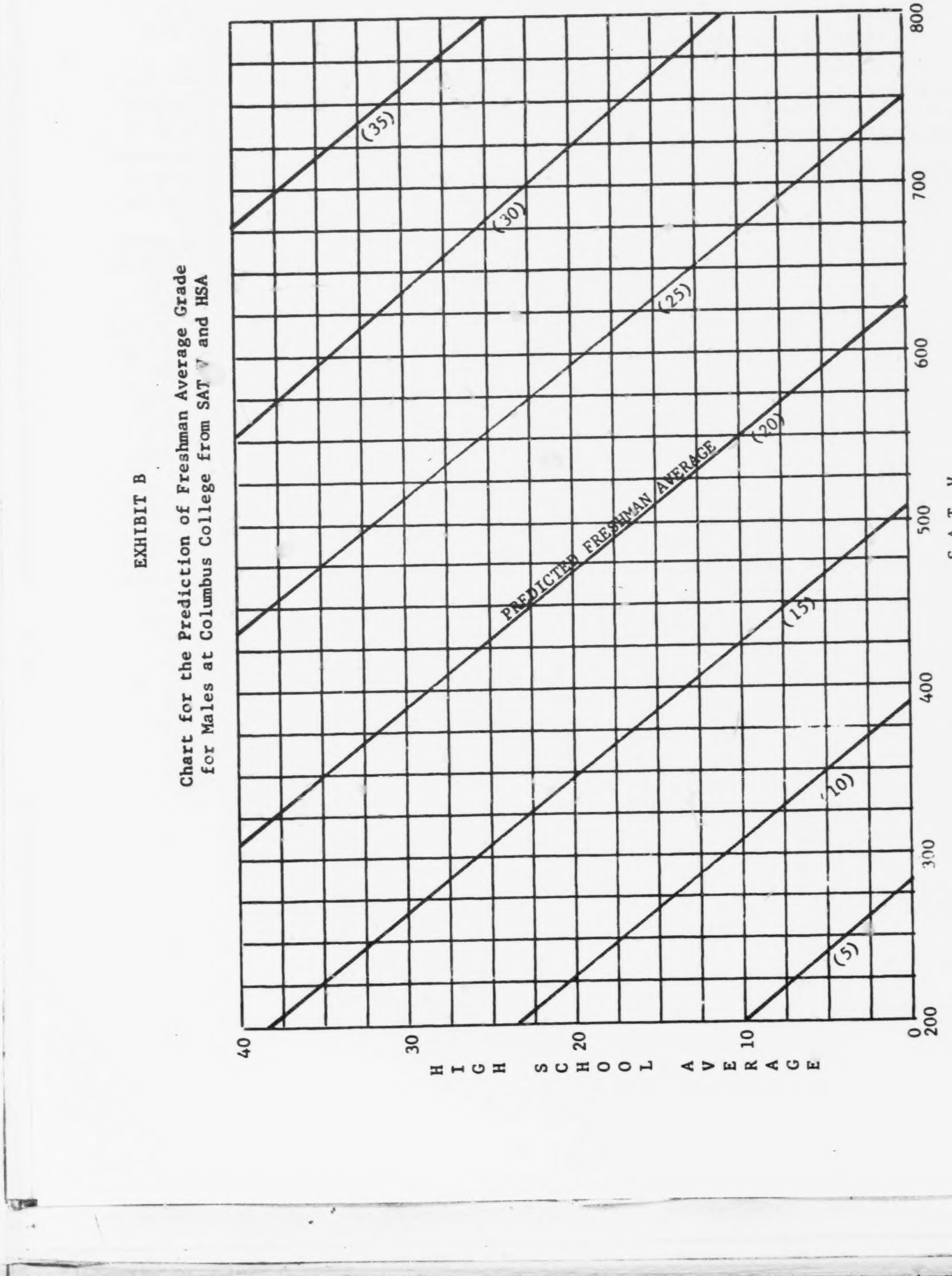

EXHIBIT C

Worksheet for Computation of Cutting Score

LINE	FOR MALES	HOW OBTAINED
1	750	Enter the number of Anticipated Applications for the Fall Quarter of the coming year.
2	500	Enter the number of desired Entering Freshmen for the Fall Quarter of the coming year.
3	266	Enter the number of Accepted Applications for the Fall Quarter of the previous year.
4	221	Enter the number of Entering Freshmen for the Fall Quarter of the previous year.
5	1.20	Compute the ratio of Accepted Appli. to Ent. Frosh. by dividing Line 3 by Line 4.
6	600	Compute the number of Applications to Accept by multiplying Line 2 by Line 5.
7	80 %	Compute the per cent of Applications to Accept by dividing Line 6 by Line 1.
8	20 %ile	Find the percentile interval in which the cutting score will fall by subtracting Line 7 from 100%.
	2.0 PFAG	Read down the column labeled All Applicants from the table for males until finding the %ile that is closest to the %ile on Line 8. The PFAG that corresponds to this %ile is the PFAG Cutting Score.

EXHIBIT D

Ryan Test for Multiple Comparison of Means

Rank	Group	$\bar{X}_i$	s_i^2	df_i	$s_{\bar{X}_i}^2 = \frac{s_i^2}{df_i}$	
A						
B						
C						
D						

a=.05 m=4	Compare Level	$\hat{p} = \frac{a}{m(k-1)}$	U_i	$\sqrt{s_{\bar{X}_1}^2 + s_{\bar{X}_2}^2}$	$U_i \sqrt{s_{\bar{X}_1}^2 + s_{\bar{X}_2}^2}$	$\bar{X}_1 - \bar{X}_2$
K=4	A-D	.00417	2.638			
K=3	A-C	.00625	2.498			
	B-D	.00625	2.498			
K=2	A-B	.01250	2.242			
	B-C	.01250	2.242			
	C-D	.01250	2.242			

PLANNING COLLEGE FACILITIES

John X. Jamrich
Associate Dean, College of Education
Michigan State University

THE IMPORTANCE of systematic study and planning of educational facilities must be underscored on educational grounds even though the dollar-values may, perhaps, be more easily discernible. The degree to which a given college can continue to provide relevant and significant experiences, at a quality level, will certainly depend upon its ability to create an instructional program in response to the demands of its clientele. This, in turn, will depend upon the appropriateness of the instructional facilities to the kind of program which is envisioned at each institution. The systematic approach to planning, then, assures a continued dynamic quality to the curriculum and the physical facilities in which the program is housed.

In a majority of colleges there probably exist campus plans, though the character of these plans varies widely. Within recent years, an increasing number of colleges have developed detailed "master plans" which are being followed and which were based on very careful analyses of the total institution. In most cases, however, it would appear that the plans that do exist are relatively limited in scope and consist primarily of informal sketches of the campus or of some portion of it with little or no basis in a thorough institutional study.

Increasing concern for the integral relationships between the instructional program and the facilities is being reflected in campus plans which are evolving in a number of institutions. Of course, in most institutions which have been in existence for decades, it would be difficult if not entirely impossible to recreate the entire campus arrangement in accordance with some of the principles of facilities interrelationships. The most vivid demonstration of these evolving plans finds its expression in those situations where a college, after thorough study, decides that its present facilities are or will shortly become inadequate for the level of enrollments and the type of instruction which it intends to provide. These colleges have been able to develop their plans with relatively minor limitations, except perhaps, the existing traditions in the minds of the colleges and campus planners.

One of the first steps in developing a sound campus plan and ascertaining needs is to make a complete inventory of the present physical plant. Here, attention should be given to such factors as the age of the buildings, their adequacy from an engineering and instructional point of view, whether the use is for residential or non-residential purposes, and whether it is used for instructional or non-instructional activities. Also included should be some information regarding the dollar investment in the buildings, the source of the funds, and, of course, the total square feet of space in each of the categories.

The judgment of adequacy should be made in terms of (1) the structural characteristics of the space and (2) the appropriateness and adequacy of the facilities for the type of instruction contemplated now or possible in the future. In one study of college facilities, it was found that from one-fourth to one-third of present facilities would be judged inadequate for one or both of these reasons.

Improving Space Use

Emphasis must be placed on the fact that increased use of instructional facilities is not an end in itself, but should reflect careful considerations of the instructional program in relation to such increased use. Several factors can be noted as important in the attempt to improve utilization:

1. Class schedules must make use of the entire 8-hour day and the 5-day week.
2. The units of curriculum need to be studied to see possible modifications and their effect on utilization.
3. The weekly schedule, as well as the length of the day, may have to be lengthened.
4. Clearly, additional students can be accommodated by means of a lengthened school year.
5. Exploration should be made of the traditional question of student station occupancy for each credit rendered in a course.
6. Exploration should be made of the question of the need to provide such extensive laboratory space and equipment for the non-science major as is provided for the majors.
7. Planning new facilities should include considerably more flexibility for use than some of the traditional construction.
8. Careful attention should be paid to the size and shape of each room.

Summary of the Planning Process

The approach of institutions to the problem of assessing and providing for physical facilities needs, as well as other institutional problems, is more than likely to be approached in a fairly informal and unsystematic manner. There is very wide variation in the extent to which faculty participate in the initial planning and study. Furthermore, there is wide variation in the scope of studies which the colleges undertake in their attempt to assess their individual problems.

More often than not, the decisions regarding the needs for facilities appear to have been based on some projections of enrollments for the college without full study of the nature of these enrollments, the implications for the curriculum and for instruction, and the resultant staff needs. These in turn affect the financial base from which a college can move toward providing new buildings.

When the planning by colleges is viewed in broad perspective, it becomes clear that there are several factors which are inseparably intertwined and which must be studied thoroughly in the process of establishing facilities needs in a college.

Enrollment

1. What have been the trends in institutional retention rates?
2. Where have the students come from?
3. Are there new geographical areas of service which can be

developed for additional students?

4. What has been the academic potential of the students?
5. What have been the most frequent areas of study of past students?
6. How will future enrollment of this institution reflect the state and national trends expected?
7. What would be a realistic level of enrollment to expect during the next two decades?
8. Given these levels and improved retention rates, what can be the expected enrollments in the several classes of the colleges?

Faculty

1. What is the level of preparation of the present staff? Should this be improved? If so, where will the source of such improved staff be?
2. How many new staff will be needed in the specific areas of study to provide for retirement alone?
3. How many will be needed to provide for the increased enrollments, assuming no change in the present program and instructional program?
4. How many will be needed if certain changes are effected in the curriculum and instruction after careful study of these?
5. How has the current salary schedule provided for competition for the types of faculty needed?
6. What will the level of salaries have to be during the next 20 years to provide for retention and attraction of competent staff?

Curriculum and Instruction

1. What are the purposes and objectives of the college and how are they translated into operational terms in the classroom and the campus as a whole?
2. How appropriate is the present curriculum for the above objectives and purposes?
3. How appropriate is the curriculum for present and future social, technical, and cultural demands?
4. What is the scope of the present curriculum in terms of the number of courses, the number of majors, and the number of different programs offered?
5. What are the present practices in class size?
6. What are the present practices in faculty teaching load and other responsibilities?
7. How adequate are the supplementary learning facilities such as the library?
8. How do class sizes vary from subject area to subject area? How is this related to the matter of instructional budget allocation and to the stated purposes of the institution?
9. What is the extent of small classes being taught--classes enrolling less than five and less than ten students?
10. How extensively are large classes utilized in the instructional program of the college?
11. How can educational quality be retained, and at the same time provide for the needs of students through a compact and efficient program?

Finances

1. What is the level of the total income of the institution and what proportions of it are derived from specific sources such as student fees, endowment, gifts, church or other

appropriations? Are these proportions in line with those in comparable institutions, and, even though the proportions may be high enough, are the actual amounts available sufficient to provide operating capital for the important phases of instruction and other elements of the college?

2. What is the economic level of the student clientele?
3. If it is a church college, what is the economic potential of the church constituency?
4. Has the alumni group been brought to a satisfactory level of contribution?
5. What are the factors which inhibit the better use of space on this campus?
6. If new space is needed, what should be its extent and specific character to provide for the type of instructional program which the college plans to offer?
7. How will new facilities be financed?

The implementation of studies designed to provide institutional data on these items is vital to an adequate assessment of need for new facilities and programs for the college. One effective vehicle for planning and carrying out such studies and then coordinating and relating the results toward a unified plan is to be found in a Faculty-Administration-Board of Trustees Committee. It is clear that this single committee would not take on the responsibility of planning and actually carrying on all of the studies, but such a single group is essential to provide the necessary leadership and coordination to make for success of the procedure.

A general sketch of the entire planning process is shown in Figure 1. Here the role of the primary committee and small staff committees appointed to conduct the studies is shown. Also indicated are the possible roles which educational consultants and architectural planners can play and where their most effective contribution can be made. Most important of all, the diagram attempts to portray the inseparable relationships among the various institutional factors in the determination of institutional needs of any sort.

Perhaps the most evident observation that can be made relates to the manner in which the colleges, large and small, which have not developed a total institutional plan can be assisted in this effort. There appears to be a need for the identification and establishment of regional resource and reference centers to which all colleges could look for competent and experienced assistance in the development of total institutional study plans as well as professional assistance in carrying out these plans.

The second observation relates somewhat to the first, but from a somewhat different point of emphasis. As the colleges study themselves and plan, it is evident that the one thing which emerges is the concern for the relative significance and interrelationship of one factor of the college picture to another. For example, if the faculty attempt experimentation with different class sizes and at the same time make certain modifications in the number of hours taught and major areas of study offered, what implications does this have for faculty and student load and for the salary levels of faculty members? What can the college expect of enrollment increases in total and in certain subject areas? How does the level of possible space utilization relate to scope of course offerings and class size?

There is need, then, for a systematic research into the total programming of the managerial aspects of the college. Is it possible, for example, to construct an abstract model of a college which then can be utilized to

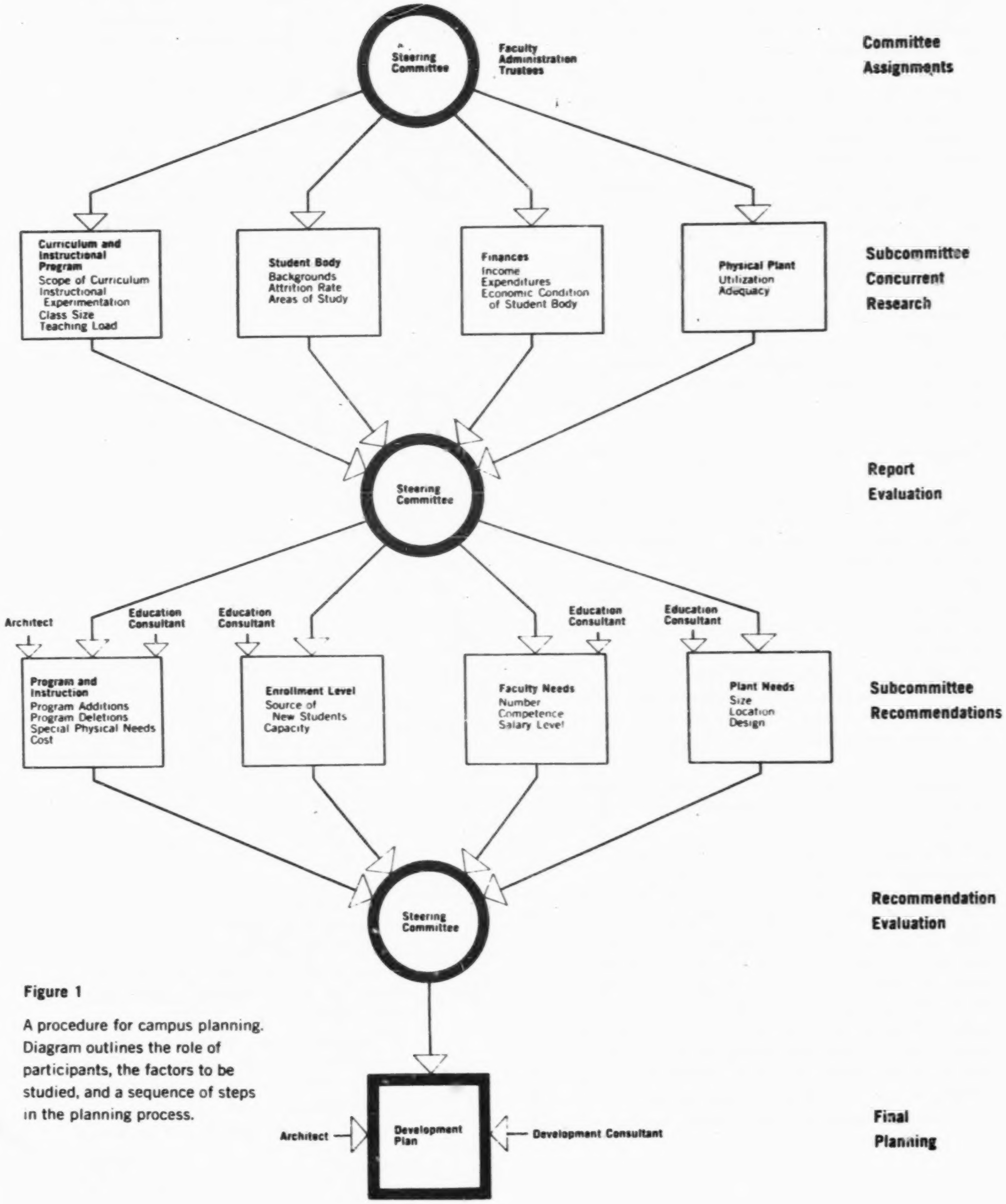
Steering Committee
Faculty
Administration
Trustees
Committee Assignments
Curriculum and Instructional Program
Scope of Curriculum
Instructional Experimentation
Class Size
Teaching Load
Student Body
Backgrounds
Attrition Rate
Areas of Study
Finances
Income
Expenditures
Economic Condition of Student Body
Physical Plant
Utilization
Adequacy
Subcommittee Concurrent Research
Steering Committee
Report Evaluation
Architect
Education Consultant
Education Consultant
Education Consultant
Education Consultant
Program and Instruction
Program Additions
Program Deletions
Special Physical Needs
Cost
Enrollment Level
Source of New Students
Capacity
Faculty Needs
Number
Competence
Salary Level
Plant Needs
Size
Location
Design
Subcommittee Recommendations
Steering Committee
Recommendation Evaluation
Architect
Development Plan
Development Consultant
Final Planning

Figure 1

A procedure for campus planning. Diagram outlines the role of participants, the factors to be studied, and a sequence of steps in the planning process.

yield useful information to our colleges and universities in the transitional stage from one enrollment level to another and from one type of instructional procedure to another? Research into this phase of the college problem would, perhaps, yield results useful to them in their plans for additional physical facilities as well as in other aspects of their programs.

There is one additional area in which considerably more research is needed. There is a need to bring together research on the adequacy of instructional facilities in terms of their relationship to effectiveness of instruction. That is, what differences in the quality of learning can be observed under different conditions of physical plant environment?

Planning for Future Facilities Needs

As colleges and universities attempt to assess the extent of their future physical facilities needs, and as they attempt to evolve plans for meeting these needs, it is becoming increasingly evident that the process of assessing the need and planning to provide for it cannot be carried out in isolation from the total complex of the institution. Thus, the need for new instructional facilities should be a direct response to the need for an increased volume of instruction. The planning for these instructional facilities must take into account the specific curricular factors which are giving rise to the need. The exact character of such a classroom facility can only be established by considering the details of the anticipated enrollment growth. And certainly, the provision of new facilities or the replacement of obsolete units cannot be carried out without full awareness of the total financial status of the institution, the scope and diversity of the curriculum, and the provision for and utilization of faculty and staff.

Let me turn to two other topics which I should like to discuss briefly, namely, the idea of a Learning Resources Center and the Living-Learning complex.

Learning Resources Center

The major purpose of a college or university is to provide an optimum environment for the teaching-learning process, whether this process takes place in a formal classroom setting or is provided for through other means. The problem of creating such an environment is compounded by many factors one of the most difficult being the attempt to fulfill the functions of storage, retrieval, and distribution of the rapidly accumulating volume of knowledge, information, and facts. Whether we are talking about the general field of science, or humanities, economics, mathematics, or literature, the magnitude of this challenge is obvious. The solutions, however, are not quite as obvious, and if they may appear to be logically, there are a variety of factors which still stand in the way.

Furthermore, the problem is compounded by the imminent and already present levels of student enrollments and the current limits of available qualified staff in many areas. These and other aspects of the problem would appear to indicate that the effort to optimize the teaching-learning environment can be facilitated if:

1. our institutions and faculty groups would devote sufficient time and effort to identifying learning objectives;
2. careful thought would be given to how these objectives might be attained most effectively and efficiently;
3. institutional and faculty effort were to be provided such that the conditions of learning and resources for learning and teaching can be so marshalled as to assure maximum learning by students; and
4. institutions and faculty would

give careful thought to identifying the optimum conditions for learning. The lack of direct attack on the human factors in learning is most distressing, though we appear to know a great deal about how "birds learn to distinguish poison seeds from non-poisonous ones" and how pigeons learn to walk in figure eights.

It is perfectly obvious that college students learn through a variety of formal and informal procedures, including class meetings as well as reading of books, informal discussions, and the use of audio and visual equipment. These efforts on the part of the student may be stimulated or hampered by the total environment of the college campus. Even our relatively meager knowledge of the learning process provides certain principles and guides which, if applied, would assure more effective learning by students. For example, students should be led to recognize the need to learn and should be assisted in seeing the various relationships which exist among the hundreds of facts which are being learned. They should have an opportunity to reinforce their learning and must be given some assurance that they are progressing toward an objective.

In general, teaching-learning in colleges has not been developed as a unified system of instruction. If there is any unity in the existing knowledge, the learning experiences should be so designed as to reflect this unity. This can be done most effectively if a well-planned system of instruction is developed by the faculty of a college.

How is such a system to be achieved and what role can modern technology play?

To move in the direction of systematic instruction on our campuses will generally require a "new look" and a new point of view by members of the faculty. It will require a "new look" as far as most campuses are concerned in terms of services and resources. In all probability, the implication of all this is that a new coordinating agency may evolve on our campuses. Such a unit might be called upon to:

1. seek and provide information regarding the optimum conditions of learning;
2. provide for the coordination of all facilities dealing with the storage, retrieval, and distribution of knowledge;
3. provide professional help in the development of learning-teaching materials for both the faculty member and the student for purposes of individual learning effort; and
4. be involved in the planning and evaluation of the total instructional effort of the college.

Suppose that, without going into greater detail, one were to adopt such an idea. What would be the nature of the Learning Resources Center on a campus? What would it include and how would it be housed?

A coordinated learning resources center would contain:

1. appropriate equipment and facilities for individual student learning activity designed to present basic factual materials for courses as well as to provide the opportunity to review presentations already encountered in class;
2. appropriate equipment which would enable the faculty members to carry on efficient individualized study and research;
3. the traditional library, and more, with a new orientation to storage and retrieval of knowledge;
4. materials for presentation preparations by faculty and students;
5. audio and visual equipment needed for the use of the materials prepared for presentation; and
6. professional staff competent to

carry on research in learning, materials development, evaluation, and equipment maintenance.

There has been considerable discussion as to how such a facility should be housed. In the ideal, perhaps, the unit should be on a centralized basis with adequate provisions for campus-wide dissemination to selected classrooms and residence halls. At the same time, our campuses already have several pieces of such a unit in existence. Some have closed circuit television, others have instructional materials centers, and, of course, all have traditional libraries. The cost of completely centralizing these would be extremely high, so the question is how to bring about a systematized instructional program without excessive cost and duplication.

In all probability, the present library facilities and existing closed circuit facilities can be tied in with any unit which would be centrally housed. The real hurdle is not this physical centralization but, in all probability, the need to centralize the focus of instruction by members of the faculty and to bring about the recognition that the utilization of such a facility can enhance the teaching-learning process immeasurably.

Living-Learning Complex

Now for the second item. Closely related to the matter of the teaching-learning environment is the manner in which we have utilized or not utilized our residence facilities to carry on or even reinforce the effects of the instructional program. Even a casual observer of the campus scene will readily see that colleges have failed to capitalize on the out-of-class environment for extending the instructional program. They also have not capitalized on the possibilities for the living environment of the student to inject an "intellectual level" into the life of the student.

The primary reason for this probably lies in the fact that as our campuses grow larger and our residential facilities expand, it becomes increasingly difficult to weave the residential facilities into the instructional fabric of the campus.

The attempt to construct instructional facilities in our residence halls promises to provide for at least two important elements of college campus life: (1) it should give us a greater opportunity to utilize the non-class time of students to reinforce learning; and (2) it will give us an opportunity to provide for "a college within a college" sort of identification for the student.

A number of such facilities have evidently been constructed. One such plan looks something like Figure 2.

In conclusion, it is important to emphasize that space utilization data as such provide only one point of reference in the planning of instructional facilities. Even more important, perhaps, is the need to approach systematically the total planning process and to relate the planned facilities to the instructional program to be housed in them.

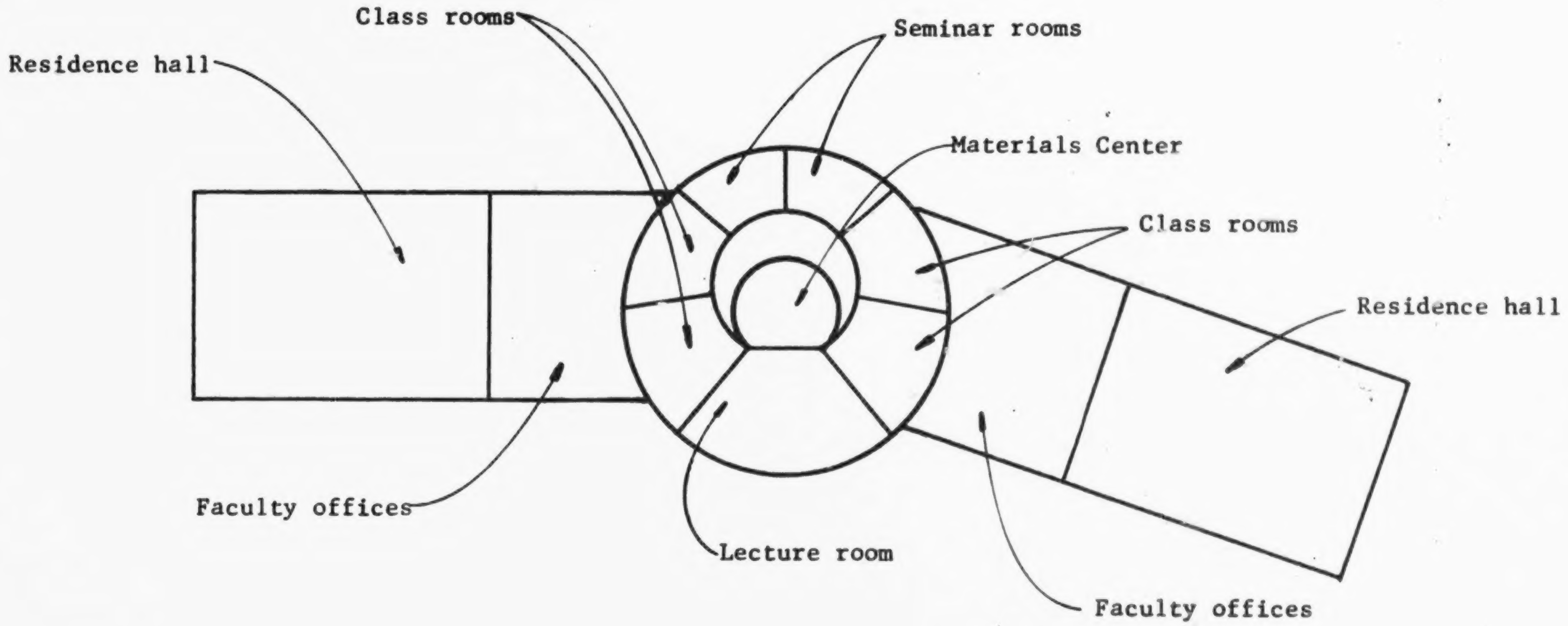
Class rooms
Seminar rooms
Residence hall
Materials Center
Class rooms
Residence hall
Faculty offices
Lecture room
Faculty offices

FIGURE 2

A Plan for Instructional Facilities
In a Residence Halls Complex

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NEEDED RESEARCH IN SPECIAL AREAS: FACULTY CHARACTERISTICS, NON-ACADEMIC PERSONNEL, GRADUATE STUDENTS

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IF THERE WAS a time when research upon their own operations and structures was not a recognized necessity in some academic institutions, that time is long past. Not past at all is the period when the diffusion of this understanding was sporadic, too often patronized, and too little seriously undertaken even by those comprehending it.

Even today I suspect that a majority of institutions of higher education do no such research and would be unable seriously to undertake any if they so desired. Certainly only a very few maintain offices or staffs for that purpose, or have any continuing program in it. This is a strange state of affairs because, in some academic circles at least, the necessity for continuous apprehension of the state of the institution is well known and well practiced. It is even beginning to be recognized that for many of our larger or more strategic universities and colleges such auditing has become a national necessity.

The reason why this should be true is not hard to discover, of course. This is a period of radical expansion for our colleges and universities in student enrollment, in faculty, and--most significantly--in purposes and functions. More and more they are being recognized as key ingredients for at least two processes vital to the national well-being: the dissemination of higher education to ever-increasing proportions of the population, and the conduct of both basic and applied research enterprises.

Significantly, however, these expansions are taking place at a time of increasing expansion of other areas of national life which compete with the educational institutions for time, personnel, and funds, whether from taxes or private endowments. Thus, to use a slang term, "the squeeze is on" the schools to perform more efficiently than ever before an expanded and immensely expensive program under hitherto unknown pressures.

In these circumstances, the absolute necessity for searching self-scrutiny on the part of the educational institutions should be readily apparent: we can no longer afford the fiscal, operational, and functional laxity with which we might have operated as little as fifteen years ago. I suspect that all educational administrators are only too familiar with the dollar squeeze and the space squeeze as these terms apply to departmental budgets and housing. Typically, in the larger universities, these pressures are met by rigorous analysis of requests, appropriations, and operations in order to wring every possible use out of every dollar and every foot of floor space. Equally typical, however, has been the failure of most educational institutions, even those used to the concept, to subject other areas of their operation and structure to similar scrutiny.

It is my purpose today to suggest to you some aspects of the educational enterprise which bear serious faculty and administrative study for the purpose of more efficiently and satisfactorily performing the operations with which they are charged. Some of the ideas I will propose are highly sociological in nature; others are more purely administrative. All bear upon the demand for more accurate and more reliable *information* (facts) about the actual nature of the institutional operation--something about which we really know surprisingly little. Let me attack them *seriatim*:

Faculty Characteristics

We know a fair amount about the characteristics of American college or university faculty *members*: their social origins, training and experience, religious attitudes and political behaviors, etc. We know practically nothing about the characteristics of faculties as social groups or organizations, work units, which is indeed surprising since it is this aspect of them with which we must continually deal. In this regard, I should like to commend to you the utility of simple descriptive statistics, which may be competently gathered by any stenographer from available records. With these as a base, a number of interesting and important auditing functions can easily be performed annually or even, if desired, upon a semester basis.

Probably the most useful of these auditing functions is what I like to call "vacancy control," which is simply a term for the review of all budget items for personnel positions falling vacant in any given year. A variant of it might even be employed for equipment and maintenance funds as well. The operation of the procedure is simple: every time a person leaves the employment of the university, the funds which supported him in his department, division, or office dissolve, and are turned over to general funds for disposal as needed. In order to qualify for a continuation of the position, the department or office which held the vacated position must justify its continuing need for it in exactly the same way it or any other department would have to justify the creation of a new position. If other needs appear more pressing, the request is denied in favor of the more exigent one even if the latter falls in some other area of operation entirely.

This is, of course, not a statistical procedure, but the decision to continue or deny the position can be greatly facilitated by the collection of basic statistical information about the operation of the competing departments. In this regard, I should like to describe for you a device with which I became acquainted while assistant to the academic vice president at the University of Minnesota. This was a document called the "course inventory," routinely compiled by IBM machine every quarter and summer session. It listed, mechanically, every course offered in the university that term by department and college, together with the room size of the space in which it was offered, enrollment by size, college, class, and sex, and the name of the instructor with his salary and term of employment.

A second section of the same volume was devoted to academic personnel on the payroll in the given term, showing for each person his class assignments with enrollments broken down as described, clock and credit hours for each course, and salary and term of employment. In this document, then, the university had a complete record not only of exactly what every student was taking and its faculty actually teaching, but of its teaching use of physical plant as well. (If you consider this a moment, I will probably not need add that a check of the actual utilization of teaching space demonstrated that, although all buildings were apparently being used to near-capacity, the actual employment of teaching rooms and laboratories, based on a 44 hour week, was only about 25%. This survey, in itself, is a highly useful one.)

With this information about departmental and individual operation in the teaching endeavor, plus more personal information from the faculty personnel records file, it should be possible for a university to maintain a continuing audit of departmental trends in hiring, teaching, enrollment, research, productivity, and even to some extent employ a measure of quality control in hiring and firing as well as operation.

A similar elementary audit--which so far as I know is nowhere used in higher education--is the exit interview with departing staff members to determine the causes of their departure as well as their destinations. Both of these items of information should be of concern to an institution because, collectively, they tell it a great deal about its nature and policies as they appear to its employees as well as give it a measure of turnover in amount and quality.

These are simply auditing functions which may be carried on statistically from the central administration with regard to either faculty or staff problems. Rather more complicated, though perhaps not in the long run any less pressing, are some topics for more purely sociological research which I urge that someone should be looking into. These could include the following as starters:

1. The Characteristics of Departmental Productivity

We know a fair amount about individual productivity; what urges drive the scientist to his work or the humanist to his typewriter. We know practically nothing about the social situations in which we employ such persons as those situations may induce or impede those urges. This is passing strange, too, since in most instances it is the collective product with which the administrator is concerned. (Generally speaking a productive department is of greater value to the university than a productive individual in a department otherwise undistinguished.) On a common sense and experiential basis, however, there seems little doubt that the departmental "atmosphere," that elusive thing called "working conditions," is of significant importance to individuals in their work. Indeed, even entire campuses sometimes partake of a single collective working gestalt.

We all know of departments remarkably productive, composed of individuals busy at their tasks and performing well at them, while elsewhere on the same campus are other departments composed of men of equal merit, doing little of any apparent significance. There is some tendency to explain these differences as being due to the nature of departmental administration or administrators, or sometimes departmental histories; these hypotheses may be correct, but they should be investigated and their empirical concomitants identified and explained.

2. The Academic Department as a Work Group

Similar investigation should be undertaken of a closely applied topic: the academic department as a work group. We all know of the Bank Wiring Room at the Hawthorne electric plant forty years ago, and of the effects of various externally induced changes upon the work groups therein. Not only is nothing known of the academic department as a work group but it is usually not even conceived as such although, as indicated in the preceding discussion, the consequences of its existence are quite real indeed. This may be especially important for those departments doing teaching chores required by university curriculum or by law, such as the offering of United States History for all freshmen, or the teaching of basic English.

3. The Effectiveness of Departmental Administration

Again closely paralleling ideas already set forth would be an investigation of the effectiveness of departmental administration and the concomitants of effective and ineffective administrators and administrative techniques. The answer to the query "Effective for what?" will of course be determined by the administrative end-in-view and will in turn determine units to be studied as well as particular investigative techniques.

4. The Nature and Effects of Faculty Peer Groups

Still paralleling some of these ideas is yet a further one: studies of the nature and effects of faculty peer groups on such matters as the effectiveness of departmental administration, the limitation or maximization of faculty productivity (for who can deny the existence of departments with faculty norms for work or non-work), the types of productivity characterizing a department or a faculty, and even the operation or consequences of administrative policy. (And here all of us must recognize a tendency to believe that any process over which we exercise initiation or control is necessarily delimited largely by our efforts, as teachers in the classroom over students, or as administrators over faculties. Yet nothing could in fact be further from the truth. My ability to assign work in furtherance of some end for my students is flatly circumscribed by their willingness to do it, and is subject to student norms of what constitutes "fair" or "reasonable" expectations and performance. The president's ability to impose changes in policy upon the faculty is similarly circumscribed by their willingness to adopt or act upon them.)

I recognize the poverty of these few suggestions for useful research which might be undertaken--indeed I might say must be undertaken--upon faculty characteristics. I offer them only to indicate the direction and the need. We know so little, actually, about such matters that the pressing question is not what to do but where to start doing anything. The field is open.

Non-Academic Personnel

I have indicated that the study of socially significant aspects of faculty characteristics is rare. Almost totally unknown is the study of the characteristics of non-academic personnel and departments. Some of the information I have suggested as needed for faculties and their departments is obviously applicable to staff and their departments or work units as well. I should like to suggest briefly some other studies of staff, or non-academic personnel, which would also be worth undertaking as institutional research. Again, each of these is just a suggestion offered as a heuristic device, or as proposed information-collection toward the solution of a single problem, but they may serve to suggest others.

1. The Influences of Non-Academic Personnel, Policy Making, or Departmental Procedures on Academic Matters

I believe it may not be generally realized that, in some areas of the university's academic life, a great influence is exerted on the manner in which academic affairs are carried on by completely non-academic considerations. You are all familiar with, and I have alluded to, the problems of space. Deans and department chairmen are familiar with some ways in which space limitation, or the nature of available space, may influence such academic matters as research programs. Most research professors are aware of some ways in which, to give another example, fiscal rules and procedures may color, limit, or, in the extreme case, determine, a research program. Examples are endless. But there may be other examples of unknown and unintended consequences of the university's "business" operation for academic affairs which could and should be explored. For example, do admission regulations, intended to discourage less promising students from beginning their programs at junior colleges and then transferring into the university in later years, actually have the effect of encouraging them to start at the university, thereby swelling its freshman enrollment and failure rate instead? If, as is common, the Office of the Registrar assigns classroom space, what effect upon a department's program does the availability or non-availability of large classrooms produce? Do registrar's regulations, intended to maximize building use by requiring classes to be offered at hours and days unpopular with students, have differential effects upon required and non-required courses and departments offering them, as well as upon teachers? How do state laws requiring or forbidding certain types of expenditure affect research programs, faculty recruitment, etc.?

2. Survey of the Faculty's Perceptions of the Powers and Practices of the Non-Academic Staff

Related to these considerations would be a survey of the faculty's perceptions of the powers and practices of the non-academic staff and departments and resultant faculty behavior toward them. This would strike at the heart of a major communication problem dogging many universities. All too frequently a great deal of resentment and inefficiency results from misinformation about simple matters of how-to-do-it, or why things are done in a given way, or the lack of such information. The study suggested, by discovering what the faculty believed, would indicate such points of ignorance or misinformation which could then be clarified. A reverse study of the staff's perceptions of the faculty, and its role in relation to them and the university, might also be of great value.

3. The Day-to-Day Operation of Non-Academic Departments

Another area of often unrelieved ignorance about the actual operation of our institutions is that of the day-to-day operation of non-academic departments. In this regard I can recommend a procedure I have followed myself a time or two, always to my considerable illumination. This is the technique of shadowing a given piece of paper, or operation, through all steps routine for it from inception to fulfillment. For example, what exactly happens to a standard purchase order for, let us say, a ream of paper from the time it leaves the typewriter of the departmental secretary until the time the paper is delivered to the department? Even a simple calendar of locations and times for the trip may be revealing for administrative purposes, and if these are combined with brief interviews of every person handling the form, the results may well be eye-opening.

To illustrate, the University of Minnesota once operated a campus mail service which it used to communicate with students as well as with faculty members and departments. Communications from the Registrar or Deans' offices would be put into the campus mail and eventually be placed in mail boxes located in the U.S. postal station in the student union. Each student was required to maintain a post box, the rental charge for which was added to his tuition fees, and to visit the box at least twice weekly. In connection with a physical survey of the union in which it was necessary for me to create space for an expanding service by stealing it from existent others, I naturally eyed the vast area filled with student mail boxes with great envy. When it became apparent that the mail box area was the only one which could possibly be used for the necessary expansion, it occurred to me to inquire into its actual use. A shadowing of a piece of routine mail in the way just described, plus some elementary arithmetic, disclosed that it was costing the university some 8-1/2 cents to send a notice to a student by campus mail which could just as well have been sent to his residence by U.S. mail for, at that time, 3 cents.

This or similar techniques are invaluable for disclosing operational "bottlenecks," communications lags and breakdowns, administrative, procedural, or policy obsolescence, etc. Often these are capable of remedy through routine changes or decisions, once they are identified, but typically they do not become identified by the participants to and in them.

I should also like to recommend to you two other immensely useful devices developed at the University of Minnesota, one of them being an institutional research position I fulfilled. This was a function, really, as an *administrative* *"trouble-shooter"* acting for, in that case, the Academic Vice President. It was my job to provide that official with information about matters concerning which he had to make decisions. These included such things as the student union space problem already mentioned, checking facts offered by departments in budget and special requests, assisting in various internal surveys of departmental operation, plant use, etc. Since I was attached to his office as an assistant and not identified with any department, it was assumed, I hope rightly, that my observations might be more unbiased than those offered by individuals pleading for their own causes, and that information I developed might represent facts uncolored by idiosyncratic viewpoints. I do know that that function proved sufficiently valuable that it was maintained for several years and in that time broadened in scope.

The other Minnesota device is actually not a matter of institutional research at all, unless an institution doesn't have one: *a manual of operating procedures*. This is simply a set of lithographed loose-leaf notebooks kept in all administrative and departmental offices offering information to anyone who needs it as to how, where, when, and why to do anything necessary within the university--hire a secretary or a professor, purchase a typewriter or an accelerator, take a leave or resign, etc. While this may seem an elementary codification--if your institution has one--I can only assure you, speaking as a member of an institution which doesn't, that endless waste and inefficiency, not to mention rumor and misinformation, is engendered if you don't.

4. *"Faculty Paranoia" with Regard to Central Administration*

A fourth, and, I am inclined to believe, *vitally* pressing area for institutional research with regard to non-academic personnel is one I can only bring up by defining central administration as "non-academic" for the purpose of talking about it. I refer here to what I call "faculty paranoia" with regard to central administration which I have found endemic in and devitalizing to every university I have ever visited or with which I have ever been associated. Judging from my experience in study of different institutions, this seems to be differentially distributed among them in degree of intensity but absent nowhere that I know of. I have some guesses about its causes but am far more sure of its consequences.

I should like to make one thing clear at this point. I have personal experience, as student or faculty member, with only four institutions: two small colleges and two large universities. The faculty paranoia I perceived--suspicion, aggression and hostility--toward central administration at the two small colleges appears to have been eminently justified by the attitudes, behaviors, and policies of those administrations. (Those of you not familiar with such situations might read Malamud's novel, _A New Life_.) The paranoia among the faculties of the universities with which I have been associated appears to me to be largely unjustified by what I know of their administrations. This is not to say, however, that it is not the fault or responsibility of those administrations.

Faculty paranoia about administration appears to be a continuing problem in American universities and one which is unresolvable by the faculty itself. It is, I think, largely the consequences of _misinformation_ about policies, procedures and administrative decisions, and of _lack of information_ about them. Now nature abhors a vacuum, and where there is a vacuum of intelligent information, rumor and anxiety will rush in to fill it. Professors, indeed I suppose any class of intellectuals, are talkers and criticizers and hypothecators.

Most of you have been in or associated with the armed services and remember how rapidly military rumor mills spill forth. Imagine, then, a situation where the structure is staffed, not with common soldiers, but with trained professionals at speech and supposition, already socialized through years of intensive indoctrination to feel themselves underpaid, put-upon, and insufficiently respected by the world. This picture describes, of course, one aspect of the university. Under these circumstances, any action by an administrator left unexplained, any policy decision disadvantageous to some party, any unpopular decision, will inevitably be siezed upon as yet another evidence of the stupidity, if not downright venality, of the decision-makers. It has been my experience with professors that, despite their training, they are not given to attempting to understand the other's view when it imposes on their own wishes or desires or dreams, and that, further, they are seldom given intelligent explanation of why the administrator's view must perforce often be different from their own. It is a faculty commonplace that the best way to ruin a good professor is to make him into a dean, but the reasons for this apparent metamorphosis are rarely analyzed rationally. Many professors not only do not understand but have never had explained to them the wider "constituencies" an administration has to serve, the political and financial and intellectual pressures, so alien to them, that shape the university, the often crucial art of compromise.

For this reason, then, I say that faculty paranoia, with all its waste and inefficiency and pain, is the responsibility of the administration to exorcise. It must do this, first of all of course, by not _being_ venal in its relations with its scholars, though I think this rare at major universities. But, this elementary condition met, there is then a pressing need for central administration to explain itself through speech, through writing, and through personal contact, to its faculty--to inform the faculty honestly and fully of the considerations that impel decision and, when possible, to consult before decision with the faculty. Only in such ways may trust and widespread support be engendered.

The reasons why the elimination of

faculty paranoia about administration is desirable seem self-evident, but may be worth mentioning very briefly. The first is that it is painful to both the faculty member and the administrator--to the former because it causes him to live in anxiety, to the latter because it means his every action is suspect by the community he serves and his every motive maligned. The second is that it is inefficient, causing faculty men to waste motion defending themselves against perils which do not exist and administrators to waste time in campus politics to make palatable actions which should need only be described to be adopted. The third is that it is wasteful of time and talent since it defines as real that which is not, thus directing men's energies and efforts toward objects which do not exist and away from what might otherwise be possible for both the faculty and the administrator.

Graduate Students

The third major area in which I was asked to discuss needed institutional research was that of graduate students, and I turn to this point now because it follows so neatly upon the last.

1. Paranoia

There is, it seems to me, far more dangerous paranoia endemic among graduate students than even among their mentors on the faculty. This observation comes as no surprise, I am sure, to most of you. Almost anyone who has been in the graduate school has experienced what it must be like to suffer paranoid delusions. The reasons why this problem should be so ubiquitous, I suspect, are found in the status and structure of graduate education: the graduate student, already past the period of education considered normal and desirable in our society, beset from every hand with cultural values demanding that he make his way in the world while simultaneously consuming all he can of its goodies, has laid his life upon the line in a serious intellectual commitment to something he does not yet clearly understand, to be competitively achieved in a contest the rules of which are cloudy, largely unknown, and apparently differentially applied. Small wonder, then, that he should be apprehensive and, as time drags on and hardships increase, become both hostile to his institution and suspicious of it. I do not, for most of you, need to describe the effects of these conditions upon him--the anxiety, the waste motion, the frustration he endures. I suspect, further, that it contributes to the rather high drop-out rate at some of our graduate schools.

The description of the condition, however, suggests the means of its alleviation, and it is a mystery to me why such remedies are so infrequently applied: again the answer is in information. The student should be realistically apprised of the rules and expectations of the graduate school and status of his department and of his instructors. He should be told what it means to be a graduate student, the standards of performance which will be expected of him and how they may be met, and constantly encouraged to bring his questions and problems before the only persons whose opinions have any meaning to him: his faculty.

2. Limitation of Output by Graduate Student Peer Groups

A second problem the investigation of which I would urge may not be unrelated to the first: the limitation of output by graduate student peer groups. At the time I took my doctoral examinations, the number of students in my department also taking theirs simultaneously was eight or nine. We had worked and played together for some years and naturally fell into the habit of studying for examinations together. As the appointed date approached and our anxiety levels increased, we began to quiz each other, instruct each other in areas where one was weak and one was strong, and in other ways define the coming situation as one in which it would be "our group against the faculty." We even went so far as to compose and deliver to the chairman, when the exams were over, our critique of them. As might have been expected from such a situation the variation in our answers to the general questions was extremely small. My own professor remarked to me that while we had all passed the general exams, any one of us might as well have taken them for the group since we gave what amounted to identical answers, none of which revealed very much beside industrious memorization and an abiding desire to avoid exposing our intellectual processes to review.

Since that time I have heard a sufficient number of similar anecdotes to realize that the competitiveness of graduate education may all too often have the effect of producing, when combined with the rational and irrational anxieties of the graduate student, a deliberate, although unconscious, limitation on the productivity and imagination of the student. "Rate-busters" are seldom welcomed by student peer groups.

Under present circumstances this phenomenon, if widespread, should be intolerable to the university. Nothing should be permitted to stand in the way of giving our students the finest training we are capable of, not even their own neuroses and our ineffective mechanisms of graduate instruction which produce them.

3. Duration of Graduate Programs

Again related to these phenomena is yet a third: the problem of the duration of graduate programs. Information on this topic is readily obtainable from the files of the office of the graduate dean, yet I wonder how many universities know the average length of time it takes a successful student to obtain the Ph.D. from its various departments? Or why some departments have such longer averages than others? Or how degree programs may be speeded up without detracting from their value?

4. Graduate Drop-Outs

Similar to this would be a study of graduate drop-outs. Again I wonder how many universities know the drop-out rates from their various graduate programs, much less the reasons for the behavior? Or even how many realize they cannot afford for long not to know?

5. Institutional Concomitants of Graduate Success and Failure

A fifth topic for study would be the investigation of institutional concomitants of graduate success and failure. What characterizes departments the graduates of which are, generally, successful, or unsuccessful? What relations between staff and student obtain in the two? Do student attitudes toward the work differ with departments; if so, how? How is the role of the graduate student defined in the department with a high success rate, and do the average duration of degree programs and the drop-out rate in such a department correlate with other phenomena? Most of these questions are answerable by information readily obtainable but never obtained. I suggest to you, to keep this brief, that it should be obtained.

Summary

I have held this platform long enough. To close my talk, let me summarize briefly what I have suggested is my view of the three imperative functions of institutional research in our universities at this time:

1. to fill the pressing need for information above all, for without

adequate information decision is blind and policy helpless, and both perforce dependent upon myth and stereotype for guidance.

2. to maintain continuing audits of the actual operation of the institution, for without this service both the operation of decision and policy and its unforeseen effects remain unknown.

3. to continually reappraise, in staff studies, the goals of the institution and the means it uses to achieve them, for without independent and objective appraisal an institution and its administration always run the risks of mistaking words for deeds, and past for future.

NATIONAL INSTITUTIONAL RESEARCH FORUM

RESEARCH RELATED TO DECISION-MAKING

Algo D. Henderson
Director, Center for the Study of Higher Education
The University of Michigan

DURING THE past several years, research has added much to our knowledge about the nature of decision-making processes in business administration and public administration. Very little has been done in relation to colleges and universities. Because these institutions are different from business enterprise and from government, they need attention in research in order to make improvements in their organization and administration.

The behavioral sciences have been contributing a great deal to our understanding of the nature of organization, of the roles of individuals within organizations, and of the nature of group processes. Some of the theories being advanced have considerable relevance to college administration. An excellent synthesis of these theories is the new book by Rensis Likert, New Patterns of Management. His theory is that higher productivity is obtained when there is general participation in decision-making than when there is not. He proposes an organizational scheme of interlocking groups. Although Dr. Likert is addressing himself principally to business administration, his group participative theory has much applicability to college administration.

It is basic to the understanding of a college or university to think of it as having a dual nature. A college on the one hand is an educational program. To design and operate the program, it employs a faculty. Clearly this professional group should have a primary responsibility for the admission, advancement, and graduation of students and for the design and implementation of a program for their instruction. But a college is also a community of persons living and working together and, in this respect, it resembles both a political community and an operating enterprise. Here the usual principles of management would seem to have considerable applicability.

A college is, by its nature, flat and decentralized in structure. Its primary personnel, the faculty, is composed of professional men and women who think of themselves as peers of the administrative personnel. They are more than mere employees and hence vertical notions of organization do not wholly apply.

In implementing the theory of a flat, decentralized organization, however, a number of problems are encountered. One is the question of the role that the faculty should play in relation to the board of trustees. Should they be given representation on it as recommended by Committee T of the AAUP? To do so would be consistent with Likert's interlocking group idea. On the other hand, American practice sharply differentiates the roles of the trustees and of the faculty.

A second problem is being raised by present-day tendencies to create a high-level echelon of vice presidents. The typical plan includes four or five of these functional officers. They help to streamline and make more efficient the administration of these increasingly complex institutions. This organization may also have deleterious effects, such as removing the president one step further from the academic program and relegating the deans of the faculties to a position that is low in influence relative to over-all planning. The president and vice presidents, by reason of the close proximity of their offices and the frequency of their meetings, tend to make the major decisions for the institution. In this group, the academic representatives are outnumbered by those concerned with business, finance, and public relations.

Accompanying the latter development is still another one, arising from the increasing complexity of the institutions. This is the greater utilization of staff. When problems arise, they are referred to staff officers for analysis and the presentation of recommendations. This is, of course, excellent practice. Such persons, however, are becoming increasingly influential.

Developments such as these are tending to apply, to the college and university, the vertical concept of organization--the typical line-staff structure that is prevalent in business, the armed forces, etc.; and this raises some interesting questions because of the conflict with the theory as to the nature of a college.

Some large universities are endeavoring to protect the role of the faculties by decentralizing the several colleges. A step in doing this is to establish executive committees of the faculty which, together with the dean, do most of the creative work for the ongoing educational program. This is consistent with a principle of organization which says that decisions are best made when they are made at the level of best information. It also assures to the faculty a measure of control over the curriculum and student learning, especially the short-term aspects. This use of faculty executive committees needs evaluation.

The department, as a part of the structure of a university, also needs study relating to its productivity, its effectiveness, and its role in decision-making. The roles of departmental chairmen and of faculty members need study. An approach might be made through analyzing the perceptions and the preferences of faculty and chairman, respectively, relating to the use of authority.

Faculty committees are prevalent in nearly all institutions and are a convenient device with which to secure participation. They are also notoriously inefficient and consuming of the time of the members. Much has been learned about group behavior through the study of group dynamics, and I should suppose the findings of this research would have some applicability in the organization and administration of committees. The old style town meeting faculty is languishing and may disappear. If faculty are to participate, presumably they will do so through committees, but such committees need to be streamlined and made effective. We need considerable research about the utilization of committees.

A new problem is now confronting the universities by reason of the tremendous growth of organized research. Contracts and grants providing research funds usually result in the creation of separately organized groups to do the research. The members of such groups may or may not be related to the corresponding departments of the faculties. The research may or may not be intertwined with the teaching. We do not yet know what this type of research is doing to the university in connection with the use of personnel, the impact upon courses of study, and the education of students.

Reverting to the subject of the over-all organization of the institution, consideration needs to be given to the exact nature of the real organization that exists. Two authorities, Pfiffner and Sherwood, suggest that there are five overlapping organizations: the functional one, the sociometric one, the power structure, the communication network, and the decision-making organization. The suggestion has been made that each of these sub-organizations needs description and analysis and then that the five should be charted as overlays on one another in order best to describe the full structure. For example, the usual organizational chart is based upon the functional organization. The sociometric one may be rather different from this. The communication network may be very different. It would help in the understanding of the total job of administration if the several characteristics were identified and understood.

Were there time, it would be possible to discuss in some detail various other aspects of organization and administration that have substantial bearing upon the decision-making process. For example, communication is essential in any organization and this includes colleges, but there are special difficulties that arise in the case of a college because of the essentially verbalistic nature of the role of the faculty. The incoming papers, memos, journals, books, etc., that flood the faculty member's desk seriously impede his examination of information sheets and directives that come from the administrative offices. Secondly, because of their tendency to congregate in offices or at social events and engage in discussion of university affairs, there is an enormous amount of informal communication that takes place within a college faculty. Here one sees at work the phenomenon of entropy which refers to the tendency of information to deteriorate in quality as it passes along informal channels.

Another factor in any academic situation is the presence of persons with considerable leadership influence but who are not within the line of administration. They constitute a part of the communication network but not necessarily the formally organized one. One sociologist has described a spiral effect involving communication under which, as communication lessens, norms begin to vary, which in turn causes communication to decrease, which in turn widens the gap between norms. When this spiral effect occurs, as it may easily do when there is much informal communication, it may seriously lessen the formal communication and thus cause faculty-administrative relationships to deteriorate. Many administrators lose their leadership of the faculty because of insufficient feedback. They may also not work sufficiently on lessening the barriers, of which there may be many, to adequacy of communication. Thus, in various ways, research relating to communication may be helpful in administration.

Another concept that bears examination is that of power. John R. P. French, Jr., has described five types of power: coercion, reward, legitimate, expert, and referent. In the use of authority it may be very important to gain an adequate understanding of each of these types of power. For example, in a college situation coercive power is largely ineffective. On the other hand, within the faculty peer group there would be a large component of power based upon expertness of authority, and a large element of referent power. The latter exists because of the tendency of faculty members to value the opinions and judgments of professional colleagues in the various associations and societies of which they are members. In the utilization of authority by an administrative officer, it becomes very important to understand persuasion as a mode of action--possibly this is more true with a faculty group than in almost any other administrative situation.

Still another subject that will bear additional research is that of incentives. Chester Barnard analyzed incentives under the headings of monetary incentives and psychic incentives, giving illustrations of several kinds under each head. Knowing that faculty members are peculiarly sensitive to psychic incentives, we need a better understanding than we have of the relative roles to be played by these two types of incentives in securing high morale and productivity among faculty.

Many other concepts relating to organization and administration might well receive further research when applied to the college and university situation. The illustration of conflict and consensus, posed by John Millett, is suggestive of these possibilities. If Millett is right, that a college is essentially a community and that action should be based upon consensus, this again differentiates the college as an administrative organization from other types.

I have been discussing decision-making as a dynamic aspect of organization and administration. In my opinion, there is a large field of research relating to decision-making in colleges and universities awaiting our future efforts.

PROBLEMS OF NEW FACULTY MEMBERS

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EVEN THOUGH the study which I am to present this afternoon--Problems of New Faculty Members--may have somewhat a different complexion from the other studies being presented, it certainly is relevant to our primary concern of faculty satisfactions and dissatisfactions. Only if the problems faculty members perceive as being of importance to them are solved to their satisfaction are they going to be making their greatest contribution to the institutions in which they are serving and to higher education in general.

In this day of greatly expanding college and university enrollments, calling for the addition of thousands of new faculty members throughout the United States each year, administrators are seeking ways to assist these new members of the faculty in resolving the problems they face. Administrators, often assuming that they know what these problems are, have set up various types of orientation and in-service programs. Frequently, these programs have proved not to be effective.

A new faculty member may be keenly aware of matters that he perceives to be "problems," but these may not be the same as the problems a college administrator would believe him to have. The new faculty member's perceptions depend upon his own needs, values, and aspirations. In-service programs can be effective for him only to the extent that they treat adequately those matters that he perceives to constitute problems. Therefore, the primary purposes of this study were (1) to identify the problems that new faculty members in North Central Association institutions perceive as troublesome and (2) to identify the administrative practices that new faculty members find genuinely helpful in resolving these problems. (New faculty members were considered to be those full-time members of the staff who spent more than half-time as teachers and who were employed for the first time by participating institutions whether or not they had had previous teaching experience in other institutions.)

Information received from new faculty members in institutions of less than 3,000 enrollment was analyzed further for the following purposes:

1. To identify the problems that were most persistent, that is, that tended to remain unsolved.
2. To determine the extent to which the problems perceived by new faculty members were (a) personal problems related to housing, social relations, etc., (b) institutional problems related to curriculum, objectives, facilities, etc., or (c) instructional problems related to teaching techniques, selection of instructional materials, etc.

3. To determine if there were significant differences in the critical problems perceived by new faculty members that were related to the personal factors of sex, age, level of academic preparation, or previous professional experiences.
4. To determine if there were significant differences in the critical problems perceived by new faculty members that were related to the institutional factors of (a) size, as measured by enrollment, (b) nature of control, public or private, and (c) level of instruction for which institutions are accredited, undergraduate or graduate.
5. To determine the effectiveness, as perceived by new faculty members, of practices that were used extensively to help the faculty members resolve their problems, and to estimate the effectiveness, as judged by new faculty members, of practices that might be so used.
6. To formulate, by implication, suggestions for the improvement of programs of orientation and in-service education of new faculty members in colleges and universities.

Concerned over the lack of information available about the new teachers' perception of the problems they face, the North Central Association Subcommittee on In-Service Education of Teachers of the Commission on Research and Service encouraged and assisted the investigator in carrying out this study. The study was conducted by means of a four-page questionnaire which was mailed to first- and third-year faculty members in 164 North Central Association member colleges and universities near the end of the 1959-60 college year. Copies of this questionnaire are available.

The Questionnaire

Some of you may be interested in the method of constructing the questionnaire. I shall attempt to give it to you in capsule form. The first draft of the questionnaire was constructed after search of the literature concerning problems of new faculty members and the administrative procedures used for helping faculty members solve their problems. Principles of sound questionnaire construction, such as those set forth by Good, Barr, and Scates and Harold H. Bixler, were followed.

In gathering information for the first draft of the questionnaire, it was noted that problems of new faculty members seemed to be primarily of three types: (1) problems of a personal nature, (2) those pertaining to the particular institutions in which new faculty members were employed, and (3) those dealing with instructional matters. For this reason the questionnaire was so constructed, listing some specific questions under each of the three general headings and allowing space in which respondents might add other problems.

This first draft of the questionnaire was revised in light of suggestions coming from the North Central Association Subcommittee on In-Service Education, to whom it had been submitted, and results of an open-ended questionnaire sent to a new faculty member in each of six representative institutions of higher education belonging to the North Central Association in Michigan.

After the second major draft, the questionnaire was further refined for content and clarity. Suggestions for alterations came from primarily the following sources: three new faculty members of Alma College to whom the questionnaire was submitted; several faculty members at Michigan State University; members of the Subcommittee of In-Service Education of Teachers of the NCA; and members of the Commission on Research and Service of the NCA, who gave their approval to circulate the questionnaires to institutions and faculty members in NCA colleges and universities.

The final revised questionnaire contained 10 specific problems of a personal nature; 25 of an institutional nature; and 15 of an instructional nature. Each respondent was asked to evaluate each problem on the questionnaire, and was invited to add unlisted problems.

With respect to each item, the respondent was asked to indicate whether the item had constituted a "problem" _for him_ since he joined his institution's faculty. If he answered that the item was "never a problem," he proceeded to the next item. If the item _had been_ a problem for him, he was asked to indicate the following: (1) whether the problem still existed, and (2) whether it had been of "slight," "moderate," or "great" difficulty. In short, each respondent was asked to evaluate each item as to its _presence_, _persistence_, and _degree of difficulty_ as a problem _for him_.

In its final form, the questionnaire also listed 25 procedures used by administrators in helping faculty members resolve their problems. The respondents were asked to do two things: (1) to check how helpful each of the procedures used by administrators in their institutions had been; and (2) to estimate how helpful procedures not used by their administrators might have been in helping them resolve their problems.

Source of Data

The questionnaire was mailed to 2,747 individuals in the representative NCA institutions, representing all first- and third-year faculty members from slightly more than half of the NCA institutions of less than 3,000 enrollment and a smaller sample of first- and third-year faculty members from institutions of 3,000 or more.

Institutions were divided on the basis of size: small--under 1,000 enrollment; large--1,000 to 3,000; and extra large--over 3,000. Two mailings to individuals in the 144 institutions of less than 3,000 enrollment brought a 65.7 per cent response. Only one mailing was made to individuals in the 20 extra-large institutions; 42.5 per cent of this group responded.

Drawing the Sample

For inclusion in this study, a stratified random sample was selected from among the North Central Association membership of July 1, 1959. For institutions of less than 3,000 enrollment, three bases of classifications were utilized: (1) size, as reflected in enrollments; (2) nature of control, public or private; and (3) the highest level of instruction for which each institution was accredited by NCA, graduate or undergraduate.

Extra-large institutions, over 3,000 enrollment, were treated as one group for drawing the sample instead of being classified further by control and level of NCA approval as was done in the smaller institutions. There were 79 of the extra-large institutions; a sample of first- and third-year faculty members from 20 randomly selected institutions in this classification was used in this study. Responses from new faculty members in these institutions were analyzed for identification of critical problems but no attempt was made to analyze the critical problems for institutional and personal differences of respondents.

Determination of Critical Problems

The most critical problems were determined by referring to the responses on the questionnaires. The total number of responses for each problem indicated as being "great" in difficulty was multiplied by three; those being "moderate" by two; those being "slight" by one; and those "never a problem" by zero. The total weighted response was divided by the total number of individuals responding to each question. The eight problems that ranked at the top in magnitude, or degree of difficulty, were then defined as "critical problems."

Two separate sets of critical problems were identified--one set for those faculty members serving in institutions of less than 3,000 students and one set for those serving in larger institutions.

The eight critical problems identified by those serving in the 144 smaller institutions in order of degree of difficulty were:

1. Acquiring adequate secretarial help.
2. Finding suitable living quarters.
3. Understanding promotion and salary increase policies.
4. Lack of teaching aids.
5. Acquiring adequate office space.
6. Knowing what other departments expect of my department.
7. Using effective discussion techniques in class.
8. Developing effective lectures.

The eight critical problems identified by those serving in the 20 extra-large institutions in order of degree of difficulty were:

1. Acquiring adequate secretarial help.
2. Acquiring adequate office space.
3. Understanding promotion and salary increase policies.
4. Finding suitable living quarters.
5. Knowing what other departments expect of my department.
6. Knowing what other departments of the college teach.
7. Fulfilling expectations regarding research activities.
8. Knowing the institutional procedure to be followed for curriculum revision.

Analysis of Critical Problems

Responses coming from new faculty members in the 144 smaller institutions were further analyzed to determine if there were significant differences in the critical problems perceived by respondents that were related to personal factors or institutional factors. A three-stage method of analysis was employed. Differences were declared significant if, and only if, they were significant at stage three.

The purpose of stage one was to discover if there were areas of differences in the degree of difficulty related to personal or institutional factors. All responses, including partials, were tabulated for each of the critical problems and distributed according to the seven personal and institutional characteristics of respondents which were being used as the variables in the study. For example, the number of housing problem responses was distributed by sex of respondents and size of the institutions (large or small) in which they were employed. For each of the four cells thus formed the following information was determined: the sum of the difficulty ratings given the housing problem; the sum of the squares; the mean; the sum of the squares of the differences; and the variance. The t test was then applied to determine significance; first, by personal characteristic of sex; second, by institutional characteristic of size.

Similar information was determined and tests applied for personal and institutional factors for each of the critical problems.

In the above cited example, results at stage one gave indication that sex and possibly experience might be factors in the level of concern of new faculty members for the problem of housing. However, this conclusion could not be accepted without further examination of the data. Since no attempt had been made to examine the responses when all of the variables were the same except for sex, this first stage was felt to be a rather superficial analysis of differences. The sex difference might not be a real difference, but a difference that is related to experience or to one of the institutional factors such as control. A more sophisticated analysis was deemed essential, leading to the second stage.

The purpose of the second stage was to discover if there were specific areas of difference regarding the degree of difficulty of critical problems related to personal or institutional factors. All responses were matched so that all personal and institutional factors of the respondents were the same, with the total number of participants with each combination of characteristics in the possible 128 combinations being determined.

All of the respondents for whom one or more characteristics was missing were eliminated from the study, reducing the number of participants to 1,070. Chi-square tests of significance were run between the number of remaining participants and those who dropped out for the two elements of each of the seven personal and institutional variables. Results indicated no significant difference at the five per cent level in the personal or institutional characteristics of those dropped and those remaining in the study; therefore, the dropping of these did not appear to bias the results.

In the 128 possible combinations of characteristics there were only 37 which had at least 10 respondents--the number considered necessary to determine the degree of difficulty for each critical problem with any degree of confidence. Of these 37 groups at least eight groups could be matched with eight other groups in which only one of the seven personal or institutional characteristics was different. There were eight matched groupings which could be used to study the control variable; eight, the size variable; nine, the level of approval variable; eight, the sex variable; 11, the experience variable; 11, the age variable; and nine, the degree variable.

To the eight or more matched-groupings by characteristics, the t test for significance was applied to determine if there were differences as to the degree of difficulty on each critical problem. The results obtained from this process of analysis indicated whether or not any two groups which matched as to six of the personal and institutional characteristics but which differed on the seventh would be significantly different in the degree of difficulty on each of the critical problems.

For example, on applying this stage to the critical problem of housing it was found that for four of the eight groups matched, except for sex, there were significant differences at the five per cent level of confidence in the responses by men and women, men always expressing more concern for this problem than did women.

On the basis of these findings the acceptance or rejection of the hypothesis being investigated still was not clearly evident, since, as in the above example, it was found that in four groups there were significant differences and in four there were not. Since the hypothesis being investigated dealt with the concern of all males and females in the NCA institutions in relation to the housing problem, a third stage of investigation was used in which the matched groups were combined.

The purpose of this third stage was to attempt to draw some general conclusions regarding the nature of relationships between each of the critical problems and the seven variables. Two steps were involved in stage three. First, for each of the critical problems, the total mean degree of difficulty was computed for the individuals in each section of the institutional or personal factors by combining the matched-groupings from stage two. Second, the _t_ test was applied for significance between these two groups whenever there was evidence of significant difference at the five per cent level in stages one or two or when by inspection there was indication of the likelihood of a significant difference at stage three.

The investigator realized that the best test for significance could be accomplished by matching individuals except for one institutional or personal characteristic, and then examining the differences in degree of difficulty of these two groups. Since this could not be done, combining matched-groupings seemed the next best way of attempting to draw any general conclusions relative to the hypotheses being investigated.

Concerning the housing problem, the differences in the expressed concern for this problem by the sexes held up through stage three, men viewing the housing problem as causing them more difficulty than did the women. Consequently, the hypothesis that there are no significant differences in the critical problems of new faculty members regardless of sex was rejected.

This same three-stage method of analysis was used for investigating the responses to all critical problems.

Indication of Persistence of Problems

For testing the persistence of problems, the percentage of first-year faculty members indicating problems persisted was determined for each problem. To give an indication of the problems which seemed to dissipate and those that seemed to remain after three years, these percentages of first-year faculty members were compared with the percentages of third-year faculty members who indicated these problems persisted.

Helpfulness and Use of Administrative Procedures

A weighted-scale technique was used to determine the faculty-estimated degree of helpfulness of administrative procedures in assisting them to solve their problems. The percentage of the use of each of the 25 procedures was determined and the coefficient of correlation between the estimated helpfulness and use of the procedures was figured.

Conclusions from Study

I can not attempt to give you all the conclusions reached as a result of this study, but let me just indicate a few which may have particular significance to this group:

1. In the opinion of new faculty members in NCA institutions, a higher per cent of their problems of a personal nature and those associated with the institutions in which they were serving were being solved to their satisfaction than were those problems of an instructional nature. No instructional problem, however, was found among the top three problems identified as most critical.

2. The orientation and in-service programs of NCA colleges and universities were failing to come to grips with instructional problems as perceived by new faculty members in the NCA institutions of less than 3,000 enrollment. These problems persisted at a high level, 71.2 per cent, even with third-year faculty members.

3. General predictions cannot be made concerning the relationship which might be expected between the institutional and personal factors and degree of difficulty of critical problems which new faculty members might identify, since for no one of the institutional or personal variables was there a significant difference in the degree of difficulty evident for each of the critical problems.

4. Young new faculty members have more difficulty with problems of an instructional nature than do the older

members who join NCA faculties. In two of the three critical instructional problems in this study--developing effective lectures and lack of teaching aids--these differences were found to be significant at the five per cent level.

5. New faculty members, who have had no previous college experience, have more difficulty with instructional problems identified by all new faculty members as being critical than do those who have had previous college teaching experience. Differences were found to be significant in two of the three critical problems tested--developing effective lectures, at the one per cent level, and using effective discussion techniques, at the five per cent level.

6. It was evident from the comparable data of helpfulness and use that in many respects administrators in the sample NCA institutions were using the administrative procedures which new faculty members felt were most helpful to them in resolving their problems. The coefficient of correlation between the estimated helpfulness and use of the 25 procedures investigated was +.87. However, there were two noticeable differences in rankings in the helpfulness and use of two administrative devices. Respondents felt that light teaching loads would be particularly helpful in solving their problems, but that relatively few administrators, only 36 per cent, used such a device. They rated immediate assignment to committee as the least helpful of the 25 procedures; yet it was reported by 51 per cent of the respondents as being used in their institutions.

Suggestions for Further Study

In closing, let me suggest a few possibilities of further study growing out of this investigation that might be of interest to those of you attending this Third Annual National Institutional Forum:

1. Since critical problems of new faculty members were determined by a weighted scale technique and analyzed through use of a central tendency, there no doubt are certain problems which new faculty members have an inclination to rate at the extremes of the difficulty scale as "no problem" or "great" in magnitude that are not revealed as critical by this analysis. By studying the extremes in responses instead of using a weighted scale technique, other problems of extreme concern to new faculty members might be uncovered.

2. Since no attempt was made to analyze the responses of those new faculty members in institutions of more than 3,000 enrollment, except for the identification of the critical problems, an analysis similar to that reported here for the smaller institutions might be undertaken. Should that be done, improved methods of sampling in the extra-large institutions should be employed.

3. Since the methodology in this study involved the identification of critical problems by those who would admit to experiencing these problems, a more impersonal approach might be made by asking respondents to identify the presence and degree of difficulty of problems which other new faculty members experience.

4. Since the conclusions drawn in this study relative to the degree of difficulty of the critical problems as related to the personal and institutional characteristics of the respondents were based upon a system of combining matched-groupings, it is suggested that the same procedure might be used in any comparative study to be done in the future. As was evidenced in this study, other methods of analysis might yield quite different results.

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FACULTY SATISFACTIONS AND DISSATISFACTIONS: A METHODOLOGICAL STUDY OF PART II OF THE RUSSELL QUESTIONNAIRE*

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IN THE Spring of 1959, New York University's Office of Institutional Research assumed active responsibility for a long-envisaged study of Faculty Satisfactions and Dissatisfactions. Dr. John Dale Russell, now Emeritus Director of the Office, with some general assistance from the Committee of the Elected (faculty) Members of the University Senate, designed a 15 page questionnaire for the purpose of the study. This instrument was distributed by mail to all full-time faculty members in May of 1959.

The questionnaire was divided into six major parts, only the second of which presently concerns us.[1] Part II consisted of 86 numbered items, one of which had three parts--a total therefore of 88 conditions. Each condition was accompanied by a nine point graphic rating type scale. Respondents were instructed to

> indicate the extent of your satisfaction or dissatisfaction with the condition mentioned in the item by drawing a vertical line through an appropriate number of the scale. The larger the number checked, the greater the extent of your satisfaction with the condition stated in the item. The number 5 should be used to indicate a neutral position, the satisfaction and dissatisfaction on the item being approximately in balance, according to your observation and experience. The numbers higher than 5 indicate degrees of satisfaction, the number 9 indicating the highest degree of satisfaction. The numbers below 5 indicate degrees of dissatisfaction, the number 1 indicating a serious condition that affects very adversely your effectiveness and your morale as a member of the staff at this University.

These 88 conditions in Part II were grouped into six clusters. Cluster A contained 21 items dealing with classrooms, laboratories, research rooms, faculty offices, elevator service, maintenance, libraries, food and rest room facilities, and other aspects of physical plant. Cluster B was comprised of six items concerning the extent and quality of the services provided to faculty members by secretaries, janitors, graduate assistants, and the library staff. Cluster C consisted of 17 items relating to satisfaction with salary and salary scales, fringe benefits, and promotion, tenure, leave, and retirement policies and practices. Cluster D was made up of 30 items dealing with a miscellany of policies and practices at the departmental, school, and all-University levels of administration. Clusters E and F, consisting of six and eight items respectively, inquired into satisfactions and dissatisfactions with colleagues and with students.

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*Paper delivered by Joseph Tanenhaus. For copy of Russell questionnaire see Appendix A. This questionnaire is copyrighted by John Dale Russell and used by special permission.

Now it would be well to stress at the outset that Dr. Russell was not especially concerned with establishing a general index for measuring the level of morale. His purpose, rather, was to identify in fine detail the particular areas in which an institution might take action to improve the morale of various groups within its faculty.

Nevertheless, there is strong feeling within New York University that Part II of the Russell questionnaire or perhaps some condensed version of it, could constitute a valid instrument for measuring changes in levels of morale over periods of time. In fact, a partial replication of the 1959 study is now under way. Moreover, reactions from persons outside the University suggest that the Russell questionnaire, if widely used, might well result in national norms of faculty satisfactions and dissatisfactions. As a direct result of these interests, the Institutional Research section of the Office of Research Services, with the encouragement of Dr. Russell, recently undertook a methodological study of Part II of his questionnaire. The objectives of this investigation were three in number:

1. to examine the interrelationships among the parameters of morale built into the 88 items constituting Part II of the Russell questionnaire;
2. to identify certain key items among the 88 that would account for most of the variance of the entire group and thereby make possible the substitution of a small number of items for the 88 items without resulting loss in the instrument's value in measuring the level of faculty morale;
3. to explore the utility of certain class parameters such as rank, teaching level, principal function, and actual salary for predicting the morale level of a faculty.

Considerations Influencing Choice of Procedures

The choice of the procedures used in this study was influenced by several special considerations in addition to the usual problems of costs and the availability of suitable computer programs. Each of these special considerations warrants some comment.

In the first place, we were very far indeed from being obliged to start from scratch. Working literally until the hour of his retirement, Dr. Russell had managed to complete a very detailed and perceptive analysis of many hundreds of the pages of tabulations that the University's Data Processing Center had been able to provide during the Spring and Summer of 1961. The tabulations delivered in time for his systematic analysis classified respondents to the questionnaire by 15 categories of school, five of rank, and nine each of salary and age. Print-outs for each of these 30 odd categories included the number of respondents checking each of the nine scale options for each of the 88 morale items, as well as the sums of the scale scores for each item. For these data, Dr. Russell had calculated for all categories, and for some cross tabulations, the ranges of responses, medians, and arithmetic means for each of the 88 items, for the 88 items as a whole, and for the six clusters into which they had been grouped.

Among the findings which stand out in his analysis of the morale items are the following:

1. the range of responses, even within most of the categories, tended to be wide;
2. the mean differences among the morale levels of the 15 schools were frequently considerable;
3. there was a positive relationship between actual salary and the level of morale which was especially noteworthy in the upper income brackets;
4. the relationships between age and morale and between rank and morale were generally rather weak.

Furthermore, the data suggested that Dr. Russell's decision, when drafting the questionnaire, to group the 88 items into the six clusters previously described, was basically sound. Only Cluster D, the 30 item group labeled "Other Administrative Practices and Policies," obviously needed refinement to permit a differentiation among departmental, school, and all-University levels of administration.

The second consideration which influenced our choice of procedures in studying Part II of the questionnaire was the problem of missing data. A systematic search of the punched cards originally prepared by the Data Processing Center revealed that less than 25 per cent of the respondents had failed to answer a majority of the items in every cluster, and to provide all of the information about rank, school, salary, years of service, principal University function (whether administration, teaching, or research), and other data desired for classificatory purposes. On the other hand, a sizable percentage of the respondents failed to complete every one of the 88 items. The pattern of their nonresponses was such that the elimination of all cases with missing data would have caused too staggering a loss in the size of the sample to be tolerated.

A final consideration was the desire to pursue concurrently in the earlier stages of the study all three of the stated objectives. That is to say, we desired to develop more or less simultaneously useful preliminary data about the interrelationships among the parameters of morale built into the 88 items of Part II, as well as about both the prospects for shrinkage and the utility of predicting morale levels from nonopinion parameters.

Procedures[2]

The considerations just outlined resulted in the decision to proceed in several distinct stages. The first stage was to compute 10 sets of index scores for each respondent on an IBM 604 calculating punch.[3] Each index was made up by summing a respondent's total scale scores for a set of items and dividing this sum by the number of set items he completed. Five of the indices (cluster indices A', B', C', E', and F') were almost identical with five of Dr. Russell's clusters (A, B, C, E, and F).[4] These indices deal respectively with Physical Facilities, Personnel Services, Faculty Personnel Policies and Practices, Faculty Colleagues, and Students.

Three more (cluster indices D_1', D_2', and D_3) were created by subdividing Cluster D, the miscellany of administrative practices and policies, into separate sets dealing with departmental, school, and all-University administrative levels.[5] The two remaining indices constituted a first attempt at shrinkage. One of these (shrinkage index S-1) was comprised of the three items for which we hypothesized salience would be greatest--satisfactions with salary (item 28), office facilities (item 2), and the rooms in which teaching took place (item 1). The other attempt at shrinkage (shrinkage index S-2) added to the three items four others--rooms and equipment for research (item 3), the determination of courses the faculty member teaches (item 45), the hours and days assigned for his classes (item 46), and policies for released time for non-teaching functions (item 49).

Persons who did not respond to item 28 (satisfaction with present annual salary) and at least half of the items in each of the 10 indices were then dropped from the sample altogether. The punched cards for the remaining respondents were then sorted to eliminate those who did not provide all of the requested classificatory information about amount of actual salary, years at the University, age, number of publications, and years in present rank. In addition, respondents who did no teaching at all in credit courses, or who did not hold one of New York University's four conventional academic ranks (Professor, Associate Professor, Assistant Professor, and Instructor) were dropped. At the completion of the first stage the number of respondents in the sample had been reduced from 580 to 441.

The second procedural stage began with the running, on an IBM 1620 computer, of a matrix of intercorrelations, using as variables the 10 indices, the satisfaction with present salary item, and the class parameters just mentioned. The program used, one written by Professor Nathan Jaspen of New York University's School of Education, also made available the means for each variable. As a result, a comparison was possible between the means of five cluster indices in the reduced sample of 441 cases with the means of the almost identical clusters A, B, C, E, and F for the original 580 cases. No significant differences were disclosed.

Analysis of the first matrix of intercorrelations resulted in a decision to run a second and ultimately a third matrix of intercorrelations. The purpose of the second matrix was another attempt at shrinking the 88 morale items. Enough progress in shrinkage was disclosed by the second matrix (e.g., item 79, /general competence of students in your classes/ correlates .91 with cluster index F', and item 78 /national reputation of colleagues/ correlates .84 with cluster index E') to warrant comparing both a new shrinkage index of five items and an index of all 88 items with each of the variables included in the original matrix of intercorrelations.

The second stage of the study was concluded with several one-way analyses of variance. These were used to probe both the predictive value of certain variables, such as principal function, which could not be properly scaled for inclusion in the correlation matrices, and the character of certain non-linear relationships.

Progress toward shrinkage during the second procedural stage was substantial enough to justify carrying this objective of the study into its third and final stage, multiple regression analysis on the IBM 7090 computer at the New York University Computing Center. For this third stage we selected as independent variables eight items (items 1, 2, 3, 28, 51, 52, 78, and 79) which stage two output seemed to indicate would account for a substantial share of the variance of the 88 item index. To them we added six more (items 8, 30, 35, 43, 44, and 72).[6] The six were selected from the cluster (indices A', B', C', and D_3') least strongly related to shrinkage indices S-2 and S-3. Dr. Russell's analysis of the differences among the several schools served as an important guide for selecting the particular items drawn from these clusters.

Only respondents who completed all

14 items could be included in the regression analysis. As a result, the size of the sample was reduced to 318 cases. These cases were then classified by school into three groups--schools having a high, moderate, or low level of morale. The basis for assigning a school to a given group was Table II-I x I A of Dr. Russell's Preliminary Report,[7] which gave the mean response-value by school for all of the 88 items in Part II.

Regression analyses were then run on the 7090 computer for each of the three school groups and for the total sample. The program used was BIMD 06. The 88 item index served as the dependent variable, and the 14 individual items as independent variables. Our purpose in this first run was to determine whether the 14 items would explain most of the variance of the 88 item index, or whether additional items would need to be added.

The results revealed a coefficient of multiple correlation of more than .90 and hence a coefficient of determination larger than .80 for the total sample, and for each of the three school groups as well. With a fit as good as this, any attempt at improvement seemed an unwarranted use of resources.

But the results did not make entirely clear how many of the 14 variables would be necessary to explain 80 per cent of the variance. To determine this, we then ordered the 14 items for each group and for the total sample in accordance with their ability to account for unexplained variance of the 88 item index. The program used for this purpose was the BIMD 09 stepwise regression analysis. However, BIMD 09 does not make available the data desired on T levels, partial correlation coefficients, and proportion of the variance explained. Consequently we used BIMD 06 to rerun the items in the order developed by the stepwise program for the total sample. The results are presented in Tables II-V. This completed the third and final stage of the study.

Discussion of Findings

In describing the procedures used in this study we have already alluded to many of our findings. A perusal of the six tables in Appendix B will make others entirely obvious. As a result, in this section we shall consider only certain highlights in terms of the study's three primary objectives.

Objective I. The first objective was to examine the interrelationships among the parameters of morale built into the 88 items constituting Part II of the Russell questionnaire. Table I reports the more relevant data developed in the intercorrelational analysis conducted on the 1620 computer. These data reveal that all eight cluster indices are positively related, but certainly not identical. In addition, each correlates rather well with the 88 item index. It seems likely that further analysis would have led to an elimination of several of these cluster indices altogether without much loss in their ability to explain variations in the level of morale. The reason we did not move along this path was our interest in the identification of a small group of key items stated as objective II.

Objective II. The second objective of this study was to attempt a shrinkage of the 88 items to a very small number without resulting loss in the instrument's value in measuring the level of faculty morale. As the data in Tables II to V of Appendix B show, this objective was achieved. Table II, which deals with the total sample used in the regression analyses on the 7090 computer, shows that four items alone (30, 72, 79, and 8) are able to account for 71 per cent of the variance of the 88 item index. Adding four other items (43, 35, 2, and 44) brings the variance accounted for to 81 per cent. This represents a multiple correlation coefficient of .90.

Tables III to V of Appendix B show that the patterns for the high, moderate, and low morale schools do not differ dramatically from that for the total sample. The first eight items account for 81 per cent of the variance of the 88 item index for the high morale group, 74 per cent for the moderate morale group, and 79 per cent for the group with the lowest morale. If two more items are added (51 and 28) at least 80 per cent of the variance of the 88 item index for all groups of schools is accounted for. Thus, 78 of the 88 items in Part II of the questionnaire can be omitted without appreciable loss of explanatory power. Moreover, these 10 items seem appropriate for use in almost any type of institution of higher learning, whether large or small, public or private.

It should be pointed out that the order of the variables indicated in the tables should not be regarded as a proper indication of their importance in any absolute sense. For example, item number 30 (general University policies about faculty promotion in academic rank) appears first because it correlates more highly (.65) with the 88 item index for the total sample than any of the other variables. But two other variables, item 28 (present annual salary) and item 35 (administrative judgment shown in making increases in the salary of individual members of the faculty) are almost as strong--.63 and .60 respectively. If either of these were substituted for item 30 as the first independent variable, 30 would have accounted for little more of the remaining unexplained variance than they did. Any one of the three items 30, 28, or 35, when used together with 8 (faculty library facilities), 72 (leadership of the University), and 79 (competence of students in your classes) added in any order would do a fairly good job of accounting for the variance in the morale levels in any group of schools.[8]

Perhaps we should also state, at some danger of stressing the obvious, that there is strong probability that other small groups of items, including items not among those we worked with, could be developed which would prove entirely satisfactory replacements for the entire set of 88.

Objective III. The third objective of this study was to explore the utility of certain non-opinion parameters such as rank teaching level, principal function, and actual salary for predicting the morale level of a faculty. Table VI of Appendix B contains correlations between the 88 item index and those non-opinion variables that we were able to scale for parametric analysis. The small magnitude of these correlations led us to conclude that the non-opinion parameters built into the Russell questionnaire do not offer much promise for the prediction of faculty morale.

It is true, of course, as Dr. Russell has pointed out, that non-linear relationships may well be involved. Some efforts were made to probe them via one-way analysis of variance. Perhaps the most interesting group of findings in these variance probes deserves mention. Faculty members who have administration as their principal function have higher morale levels than those whose principal function is research or teaching. Research persons as a group display a higher level of morale than those whose principal function is teaching. But in the low morale schools, where undergraduate teaching predominates, the relationship is reversed and the teachers have higher morale than the researchers. All of these relationships are statistically significant.

Despite these findings about the relationship of morale to principal function and other findings concerning rank and time in grade, we abandoned the third objective as too unpromising during the second procedural stage.

FOOTNOTES

1. For a discussion of the entire questionnaire see John Dale Russell, "Faculty Satisfactions and Dissatisfactions," The Journal of Experimental Education, Vol. 31, p. 135 (1962).
2. The authors express their appreciation to Professor Nathan Jaspen of New York University's School of Education, and to Mr. H. L. Walowitz, Research Associate at the Courant Institute of Mathematical Sciences, for their expert and energetic assistance in solving the problems related to the computer programs used in this investigation.
3. The items included in each index may be identified by consulting Appendix B, Table I.
4. The only differences were that items 1-3 were removed from cluster A, and item 28 from cluster C.
5. See footnote 3.
6. Ibid.
7. John Dale Russell, Preliminary Report of A Study of Faculty Satisfactions and Dissatisfactions, New York University, Office of Institutional Research (typewritten, 1961), p. II-S...8.
8. Only after the completion of the report were we able to process a multiple factor analysis leading to an orthogonal simple-structure solution employing Kaiser's varimax method (BIMD 17). The 14 variables so analyzed resulted in a four factor solution which in our judgment substantially corroborates the analysis of this paragraph.

APPENDIX A

Committee of the Elected Senate
New York University, New York 3, N.Y.
STUDY OF FACULTY SATISFACTIONS AND DISSATISFACTIONS
Questionnaire to Full-Time Faculty Members, Spring, 1959

Please return questionnaire, when filled out, to Office of Institutional Research, 5 Washington Square North, using inter-office mail.

Copyright 1960
John Dale Russell*

I.

The respondent does not need to sign the questionnaire. No individual return will in any way be identified with any faculty member in the report of the study. In order that the tabulation of responses may be most meaningful, it will be necessary to group them in accordance with certain characteristics. Please indicate for each of items A. to I. below the group in which you are located.

A. Your School or College of primary assignment at this University:		IBM Code
College of Dentistry	______	01
College of Engineering	______	02
College of Medicine	______	03
Division of General Education and Extension Services	______	04
Graduate School of Arts and Science	______	05
Graduate School of Business Administration	______	06
Graduate School of Public Administration and Social Service	______	07
Post-Graduate Medical School	______	08
School of Commerce, Accounts, and Finance	______	09
School of Education	______	10
School of Law	______	11
School of Retailing	______	12
University College of Arts and Science	______	13
Washington Square College of Arts and Science	______	14
All-University, with no College, or with more than one College . . .	______	15

B. Your present academic rank:		
Professor (including Research Professor)	______	1
Associate Professor (including Research Associate Professor)	______	2
Assistant Professor (including Research Assistant Professor)	______	3
Instructor	______	4
Adjunct	______	5
Lecturer	______	6
Teaching fellow, graduate assistant, research assistant	______	7
Other (include Visiting Faculty, Research Scientist, Associate) . . .	______	8
No academic rank	______	9

C. Your employment status at this University:

Full-time, tenure . .	______	1
Full-time, non-tenure	______	2
Part-time	______	3

D. Please check, in the column below, the indication of your sex and marital status. In the column to the right, please check to indicate your present age.

Sex and Marital Status			IBM Code
Male:	Single	______	1
	Married	______	2
Female:	Single	______	3
	Married	______	4

Present Age		
30 or Less	______	1
31 - 35	______	2
36 - 40	______	3
41 - 45	______	4
46 - 50	______	5
51 - 55	______	6
56 - 60	______	7
61 - 65	______	8
Over 65	______	9

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IBM Code

E. Check the level of the highest earned degree that you hold (do not include honorary degrees):

No earned degree held . . . . ______ 1
Bachelor's degree . . . . ______ 2
First professional degree (such as M.D. or D.D.S.) ______ 3
Master's degree or second professional degree . . . ______ 4
Ph.D., Ed.D., or other degree of that level . . . . ______ 5
Other degree (indicate) . . . . ______ 6

F. In the column below please check the bracket that indicates your total years of service on the Faculty at this University. In the column at the right, please check the bracket for your annual 9-months salary for the academic year 1958-59.

		IBM Code	9-months Salary for 1958-59		
1958-59 is my first year here	______	1	Below $4,000	______	1
1958-59 is my second year here	______	2	$4,000-4,999	______	2
3 - 5 years	______	3	5,000-5,999	______	3
6 - 10 years	______	4	6,000-6,999	______	4
11 - 15 years	______	5	7,000-7,999	______	5
16 - 20 years	______	6	8,000-9,999	______	6
21 - 25 years	______	7	10,000-11,999	______	7
26 - 35 years	______	8	12,000-14,999	______	8
36 or more years	______	9	15,000 and over	______	9

G. Please check to indicate whether or not you hold any administrative title, and if so the kind of title held:

No administrative title . . . . ______ 1
Department chairman or head . . . . ______ 2
Dean, Associate Dean, or Assistant Dean . ______ 3
Other administrative title . . . . ______ 4

H. Please check in the list below the indication of your principal kind of service at this University (check only one item):

Teaching students . . . . ______ 1
Research . . . . ______ 2
About equal emphasis on teaching and research . . ______ 3
Administration . . . . ______ 4
About equal emphasis on teaching and administration ______ 5
Counselling and other student personnel service . . ______ 6
Library service . . . . ______ 7
Public service of a non-teaching sort . . . . ______ 8
Other (please indicate its nature) . . . . ______ 9

I. If the teaching of students constitutes any part of your service load at this University, please indicate the academic level of the courses you teach (check the final item if you do no teaching):

Undergraduate classes only . . . . ______ 1
Graduate classes only . . . . ______ 2
Both graduate and undergraduate classes . . . . ______ 3
Non-credit classes only . . . . ______ 4
Non-credit classes and undergraduate classes . . . . ______ 5
Non-credit classes and graduate classes . . . . ______ 6
Non-credit classes, undergraduate classes, and graduate classes . ______ 7
Do no teaching . . . . ______ 8

II

The following section of this questionnaire is designed to afford opportunity for the respondent to indicate the extent of his or her satisfaction or dissatisfaction with each of many conditions that might affect service at this University. Following the statement of each item is a scale with numbers from 1 to 9. Please indicate the extent of your satisfaction or dissatisfaction with the condition mentioned in the item by drawing a vertical line through an appropriate number on the scale. The larger the number checked, the greater the extent of your satisfaction with the condition stated in the item. The number 5 should be used to indicate a neutral position, the satisfaction and dissatisfaction on the item being approximately in balance, according to your observation and experience. The numbers higher than 5 indicate degrees of satisfaction, the number 9 indicating the highest degree of satisfaction. The numbers below 5 indicate degrees of dissatisfaction, the number 1 indicating a serious condition that affects very adversely your effectiveness and your morale as a member of the staff at this University. As an example, suppose the first item in the list below is one that does not seem to affect your satisfactions in your work at the University one way or another; in that case, it should be marked as follows:

"1. The rooms (classrooms and laboratories) in which you teach . . . 1 2 3 4 ~~5~~ 6 7 8 9"

If, however, you feel a moderate dissatisfaction about the rooms in which you teach, the vertical line might be drawn through the figure 3 on the scale, or you can note extreme dissatisfaction by drawing a line through the figure 1. If, on the contrary, you feel that the rooms in which you teach make a substantial positive contribution to your satisfactions, you could draw the vertical line through the figure 8. Below each item a space is left so that you may make suggestions for improvement on the condition, especially about those items on which you indicate some degree of dissatisfaction. If an item does not apply to your situation, please leave it blank, without marking any number on the scale.

A. Physical Plant Facilities.	Dissatisfaction ⟷ Satisfaction
1. The rooms (classrooms and laboratories) in which you teach	1 2 3 4 5 6 7 8 9
2. Your office facilities at the University	1 2 3 4 5 6 7 8 9
3. Rooms and equipment available for your research	1 2 3 4 5 6 7 8 9
4. Teaching aids, such as laboratory equipment, projectors, slides, films, maps and charts, that are available for use in your classes	1 2 3 4 5 6 7 8 9
5. The library holdings of books, periodicals, and other materials needed for students in your classes	1 2 3 4 5 6 7 8 9
6. The library holdings of books, periodicals, and other materials needed for effective research in your field	1 2 3 4 5 6 7 8 9
7. The facilities for student use of library materials in your teaching field	1 2 3 4 5 6 7 8 9
8. The facilities for faculty use of the library	1 2 3 4 5 6 7 8 9
9. Bookstore facilities for the provision of supplies and equipment needed by your students	1 2 3 4 5 6 7 8 9
10. Facilities for food service for students	1 2 3 4 5 6 7 8 9

Dissatisfaction ⟷ Satisfaction

II. A. (continued)

11. Facilities for food service for members of the faculty and administrative staff 1 2 3 4 5 6 7 8 9

12. University facilities for social occasions for students 1 2 3 4 5 6 7 8 9

13. University facilities for social occasions for faculty and administrative staff members 1 2 3 4 5 6 7 8 9

14. Rest rooms and toilets for students 1 2 3 4 5 6 7 8 9

15. Rest rooms and toilets for faculty and administrative staff members 1 2 3 4 5 6 7 8 9

16. Elevator service 1 2 3 4 5 6 7 8 9

17. Cleaning of classroom, laboratories, offices, and general space in academic buildings 1 2 3 4 5 6 7 8 9

18. Heating and ventilation of rooms you occupy 1 2 3 4 5 6 7 8 9

19. Artificial lighting of rooms 1 2 3 4 5 6 7 8 9

20. Plant maintenance and alterations service 1 2 3 4 5 6 7 8 9

21. Plant facilities for athletic and recreational activities by faculty members 1 2 3 4 5 6 7 8 9

B. Personnel Services

22. The extent of the secretarial and clerical assistance available to you 1 2 3 4 5 6 7 8 9

23. The quality of the secretarial and clerical assistance available to you 1 2 3 4 5 6 7 8 9

24. The extent of the time of graduate assistants available to you 1 2 3 4 5 6 7 8 9

25. The quality of the graduate assistants assigned to work with you 1 2 3 4 5 6 7 8 9

26. The adequacy of the janitorial service 1 2 3 4 5 6 7 8 9

27. The services rendered by the staff of the library . . 1 2 3 4 5 6 7 8 9

C. Faculty Personnel Policies and Practices.

28. Your present annual salary 1 2 3 4 5 6 7 8 9

29. The faculty salary scale, as determined by general University policies 1 2 3 4 5 6 7 8 9

30. General University policies about faculty promotion in academic rank 1 2 3 4 5 6 7 8 9

Dissatisfaction ⟷ Satisfaction

II. C. (continued)

31. General University policies about sabbatical leaves . . 1 2 3 4 5 6 7 8 9

32. General University policies about tenure 1 2 3 4 5 6 7 8 9

33. General University policies about retirement 1 2 3 4 5 6 7 8 9

34. The proportion of the University's increased resources that are made available for the improvement of faculty salaries 1 2 3 4 5 6 7 8 9

35. The administrative judgment shown in making increases in the salary of individual members of the faculty . . 1 2 3 4 5 6 7 8 9

36. Differentials that seem to exist in salaries 1 2 3 4 5 6 7 8 9

37. The application of University policies concerning the retirement of faculty and administrative staff members. 1 2 3 4 5 6 7 8 9

38. The adequacy of the financial provision for staff members who retire 1 2 3 4 5 6 7 8 9

39. Hospitalization benefits for faculty and administrative staff members 1 2 3 4 5 6 7 8 9

40. Life insurance benefits for faculty and staff members . 1 2 3 4 5 6 7 8 9

41. Health insurance benefits for faculty and staff members 1 2 3 4 5 6 7 8 9

42. Policies concerning the remission of tuition fees for staff members and dependents 1 2 3 4 5 6 7 8 9

43. The extent to which funds are made available to pay expenses of attendance by faculty and staff members at professional meetings 1 2 3 4 5 6 7 8 9

44. University efforts to maintain social life within the faculty group 1 2 3 4 5 6 7 8 9

D. Other Administrative Practices and Policies.

45. The determination of the specific courses that the faculty member is to teach 1 2 3 4 5 6 7 8 9

46. The hours and days assigned for the classes you teach . 1 2 3 4 5 6 7 8 9

47. Assignment of rooms in which your classes are to be held 1 2 3 4 5 6 7 8 9

48. General policies about the normal faculty teaching load 1 2 3 4 5 6 7 8 9

49. Policies followed in relieving faculty members of teaching loads, to take on research, counselling, administrative duties, or other non-teaching functions 1 2 3 4 5 6 7 8 9

50. Method of selecting departmental chairman 1 2 3 4 5 6 7 8 9

II. C. (continued) Dissatisfaction ⟷ Satisfaction

51. The personnel holding office as departmental chairman . 1 2 3 4 5 6 7 8 9

52. The personnel holding office as Dean of the School or College 1 2 3 4 5 6 7 8 9

53. Promptness of issuance of salary checks 1 2 3 4 5 6 7 8 9

54. Promptness in filling requisitions for supplies and equipment 1 2 3 4 5 6 7 8 9

55. Promptness with which books ordered for the library are made available for your use 1 2 3 4 5 6 7 8 9

56. The general procedures for the registration of students 1 2 3 4 5 6 7 8 9

57. Bookstore services in making available materials needed by students at beginning or during the semester or term 1 2 3 4 5 6 7 8 9

58. Ease and readiness of communication between faculty members and:
   a. Administration at the College or School level. . . 1 2 3 4 5 6 7 8 9
   b. Administration at the level of the Vice Presidents 1 2 3 4 5 6 7 8 9
   c. Administration at the level of the President and Board 1 2 3 4 5 6 7 8 9

59. Extent of faculty participation in the determination of academic policies and procedures 1 2 3 4 5 6 7 8 9

60. Extent of faculty participation in the determination of the promotion of faculty members in academic rank . 1 2 3 4 5 6 7 8 9

61. Extent of faculty participation in the development of budgets at the departmental level 1 2 3 4 5 6 7 8 9

62. Extent of faculty participation in the development of budgets at the School and College level 1 2 3 4 5 6 7 8 9

63. Extent of faculty participation in the development of budgets at the all-University level 1 2 3 4 5 6 7 8 9

64. Extent of faculty participation in the determination of standards for student conduct 1 2 3 4 5 6 7 8 9

65. Extent of faculty participation in the determination of policies concerning admission and retention of students 1 2 3 4 5 6 7 8 9

66. Information available to the faculty on the general financial condition of the University 1 2 3 4 5 6 7 8 9

67. Information available to the faculty on the fund-raising policies of the University 1 2 3 4 5 6 7 8 9

68. Extent of faculty participation in the development of the building program of the University. 1 2 3 4 5 6 7 8 9

Dissatisfaction ⟷ Satisfaction

II. D. (continued)

69. Efforts of School or College administrators to maintain high morale and esprit de corps among the faculty members 1 2 3 4 5 6 7 8 9

70. Efforts at the all-University level to maintain high morale and esprit de corps among the faculty members . 1 2 3 4 5 6 7 8 9

71. The extent of the administration's interest in what you are doing, and in helping you to do it better . . . 1 2 3 4 5 6 7 8 9

72. Your general confidence in the leadership of the University 1 2 3 4 5 6 7 8 9

E. Faculty Colleagues.

73. The general competence of your colleagues on the faculty 1 2 3 4 5 6 7 8 9

74. The extent to which your colleagues on the faculty are competent as teachers 1 2 3 4 5 6 7 8 9

75. The extent to which your colleagues on the faculty are competent in research 1 2 3 4 5 6 7 8 9

76. The extent to which your colleagues on the faculty are competent in the counselling of students 1 2 3 4 5 6 7 8 9

77. The general professional attitudes of your colleagues on the faculty 1 2 3 4 5 6 7 8 9

78. The standing of your faculty colleagues as recognized by scholars throughout the country in their respective fields 1 2 3 4 5 6 7 8 9

F. Characteristics of Students

79. The general competence of the students in your classes 1 2 3 4 5 6 7 8 9

80. The general competence of the students in your department 1 2 3 4 5 6 7 8 9

81. The general competence of the students in your School or College 1 2 3 4 5 6 7 8 9

82. The extent to which students in your classes are achieving in accordance with their several abilities . 1 2 3 4 5 6 7 8 9

83. The seriousness of purpose of the students in your classes 1 2 3 4 5 6 7 8 9

84. The previous preparation of your students for the work in your classes 1 2 3 4 5 6 7 8 9

85. The general promise of the students you know in this University 1 2 3 4 5 6 7 8 9

86. The extent of social contacts between the students and the faculty in this University 1 2 3 4 5 6 7 8 9

III

A. Please react to the following list of suggested innovations in University services by indicating on the scale after each item the probable extent of its positive or negative influence on your general satisfaction with conditions at this University. As before, draw a vertical line through the number 5 on the scale if the effect of the innovation would be neutral. Use the numbers above 5 to indicate the extent of positive influence, and the numbers below 5 to indicate the extent of negative influence on your general satisfaction.

Lessen Satisfaction ⟷ Improve Satisfaction

1. A referral service to professional specialists within the University on problems concerning:
   - a. Physical health 1 2 3 4 5 6 7 8 9
   - b. Mental health 1 2 3 4 5 6 7 8 9
   - c. Legal matters (e.g., making a will, liability) . . . 1 2 3 4 5 6 7 8 9
   - d. Financial matters (e.g., investments, insurance) . . 1 2 3 4 5 6 7 8 9
   - e. Marriage and family problems 1 2 3 4 5 6 7 8 9
   - f. Educational problems (e.g., choice of a college for a son or daughter) 1 2 3 4 5 6 7 8 9
   - g. Income tax matters 1 2 3 4 5 6 7 8 9
   - h. Travel plans 1 2 3 4 5 6 7 8 9
2. Maintenance of a University school from the kindergarten through high school, to which children from faculty families would be admitted at low tuition rates 1 2 3 4 5 6 7 8 9
3. Tuition grants for children of faculty going elsewhere to college 1 2 3 4 5 6 7 8 9
4. Budgeted funds to assist faculty members to meet expenses of entertaining students in faculty members' homes . . . 1 2 3 4 5 6 7 8 9
5. Additional kinds of insurance, such as:
   - a. Personal liability insurance for faculty members . . 1 2 3 4 5 6 7 8 9
   - b. Fire insurance for faculty members 1 2 3 4 5 6 7 8 9
   - c. Hold-up and burglary insurance for faculty members . 1 2 3 4 5 6 7 8 9
   - d. Other kinds of insurance (please specify) 1 2 3 4 5 6 7 8 9
6. Rental housing for faculty members in University-owned buildings in the vicinity of the campus where you serve 1 2 3 4 5 6 7 8 9
7. Rental housing for faculty members in University-owned buildings in a suburban area 1 2 3 4 5 6 7 8 9
8. University loans to finance home ownership by faculty . 1 2 3 4 5 6 7 8 9

III. A. (continued)

9. Indicate any other innovations in the fringe-benefits program of the University that would enhance your satisfaction with your service at this University.

B. Under existing conditions at this University, how could any given amount of increased income best be used to improve faculty satisfactions and morale? Please indicate your opinion on the relative values of each of the policies suggested below, by marking the appropriate number on the scale following it. Use the higher numbers on the scale to indicate that the item would be relatively important, and the lower numbers to indicate that it would be rather unimportant.

Unimportant ⟷ Important

1. Direct improvement in faculty salaries 1 2 3 4 5 6 7 8 9
2. Additional or improved fringe benefits for faculty . . . 1 2 3 4 5 6 7 8 9
3. Employment of more and better clerical help for faculty. 1 2 3 4 5 6 7 8 9
4. Employment of more graduate assistants for faculty members 1 2 3 4 5 6 7 8 9
5. Employment of a substantial number of additional faculty members, thereby increasing the total number on the faculty 1 2 3 4 5 6 7 8 9
6. Improvement of the administrative organization and staff of the University 1 2 3 4 5 6 7 8 9
7. Improvement of the holdings, services, and housing of the University Library 1 2 3 4 5 6 7 8 9
8. Improvement of facilities for research 1 2 3 4 5 6 7 8 9
9. Improvements and renovations of existing academic plant facilities, particularly classrooms, laboratories, and faculty offices 1 2 3 4 5 6 7 8 9
10. Construction of additional buildings for general academic purposes 1 2 3 4 5 6 7 8 9
11. Add any other that you consider important:

-IV-

A. Please check the statement, in the list at the top of the next page, that most nearly represents your opinion about the content of the college curriculum at the undergraduate level. If none of the listed statements properly reflects your opinion, write out your own expression of it on the final blank line.

IV. A. (continued) **IBM Code**

1. The liberal arts are by far the most important element of the undergraduate curriculum . . . . ____4
2. Liberal arts and occupational or professional preparation are both desirable in the undergraduate curriculum, but the liberal arts element is more important than the occupational element . . . ____7
3. Liberal arts and occupational or professional preparation are both desirable in the undergraduate curriculum, and it is not possible to say that one is more important than the other . . . . ____6
4. Liberal arts and occupational preparation are both desirable in the undergraduate curriculum, but the occupational or professional element is more important than the liberal arts . . ____8
5. Occupational or professional preparation constitutes by far the most important element in the undergraduate curriculum . . . ____3
6. Add any other statement to represent your views

   . . . . ____9

B. Below is a list of items representing various categories of responsibility for the University. On the scale following each item, please draw a vertical line through the appropriate number to indicate your opinion of what the relative importance of the item should be for this University. Use the higher numbers to indicate the higher degrees of importance, and the lower numbers to indicate less importance.

	Unimportant ⟷ Important
1. The teaching of undergraduate students	1 2 3 4 5 6 7 8 9
2. The teaching of graduate students	1 2 3 4 5 6 7 8 9
3. The advancement of knowledge through research	1 2 3 4 5 6 7 8 9
4. Preservation of the cultural heritage	1 2 3 4 5 6 7 8 9
5. Application of knowledge to life situations	1 2 3 4 5 6 7 8 9
6. The solution of problems of great national and international concern	1 2 3 4 5 6 7 8 9
7. Maintenance of a scholarly atmosphere within this University	1 2 3 4 5 6 7 8 9
8. Enhancement of the reputation of this University as a center for the higher learning	1 2 3 4 5 6 7 8 9
9. Maintenance of conditions within this University that are comfortable and attractive for excellent scholars .	1 2 3 4 5 6 7 8 9

10. Add any others:

IV. (continued)

C. Below is a list of groups to which a faculty member might feel some obligation for effective service in this University. On the scale following each item please draw a vertical line through the appropriate number to indicate your opinion of the relative importance of that group in your obligation for effective service at this University. Use the higher numbers to indicate that you consider the group to be a highly important element in your obligation at the University, and use the lower numbers to indicate the groups that are of less or little importance.

	Unimportant ⟷ Important
1. The students in the faculty member's classes	1 2 3 4 5 6 7 8 9
2. One's colleagues on the faculty in his own department .	1 2 3 4 5 6 7 8 9
3. One's colleagues on the faculty throughout the entire University	1 2 3 4 5 6 7 8 9
4. The administrative officers of the University	1 2 3 4 5 6 7 8 9
5. The Board of Trustees of the University	1 2 3 4 5 6 7 8 9
6. The alumni of the University	1 2 3 4 5 6 7 8 9
7. Scholars throughout the world in the faculty member's special academic field	1 2 3 4 5 6 7 8 9
8. Intellectuals in general in the United States and throughout the world	1 2 3 4 5 6 7 8 9
9. Suggest any other	1 2 3 4 5 6 7 8 9

). Please check the bracket indicating the number of scholarly books, monographs, and articles published under your authorship (including collaborations) during the past five years.

Number		IBM Code
None	______	0
1 - 2	______	1
3 - 4	______	2
5 - 7	______	3
8 - 10	______	4
11 - 13	______	5
14 - 16	______	6
17 - 19	______	7
20 - 25	______	8
More than 25	______	9

IV. (continued)

E. In the space below please check the proper brackets to indicate your connection with and participation in professional organizations and learned societies, of state, regional, national, or international scope. Use the first column to indicate the number of such organizations in which you currently hold membership. Use the second column to indicate the number of meetings of such organizations you have attended during the past twelve months. Use the third column to indicate the number of papers you have presented at meetings of such organizations during the past two years.

Number of state, regional, national, or international professional organizations:

1. In Which Membership Is Currently Held		2. Meetings Attended during Past 12 Months		3. Papers Presented during Past 2 Years	
Number	IBM Code	Number	IBM Code	Number	IBM Code
None ______	0	None ______	0	None ______	0
1 - 2 ______	1	1 ______	1	1 ______	1
3 - 4 ______	2	2 ______	2	2 ______	2
5 - 6 ______	3	3 ______	3	3 ______	3
7 - 8 ______	4	4 ______	4	4 ______	4
9 - 10 ______	5	5 ______	5	5 ______	5
11 - 12 ______	6	6 ______	6	6 ______	6
13 - 14 ______	7	7 ______	7	7 ______	7
15 - 19 ______	8	8 - 9 ______	8	8 - 9 ______	8
20 or more ______	9	10 or more ______	9	10 or more ______	9

F. Please list below any special awards, prizes, medals, honorary degrees, citations, scholarships, fellowships, or other forms of recognition for scholarly activities, that you have received during the past five years:

G. Have you had any special advanced preparation, beyond the level of highest earned academic degree you hold? Yes _____ (1); No _____ (2)
If the answer is yes, please list each kind of additional preparation and indicate its duration:

IV. (continued)

H. Please indicate the number of years you have spent at each academic rank at any institution of collegiate grade (including present year here):

a. Professor (including Research Professor) . . . . _____

b. Associate Professor (including Research Associate Professor) . . . . _____

c. Assistant Professor (including Research Assistant Professor) . . . . _____

d. Instructor . . . . _____

e. Other ranks, or without academic rank . . . . _____

V

A. Please indicate your housing situation

		IBM Code
1. Own own home, fully paid for, and live in it	_____	5
2. Live in own home, but it is not fully paid for	_____	3
3. Own a cooperative apartment	_____	8
4. Live in an apartment rented from the University	_____	4
5. Live in house or apartment rented from some one other than this University	_____	7
6. Live in rented room	_____	2
7. Share house or apartment with another family	_____	6
8. Indicate any other arrangement	_____	9

B. In the first column of figures below, to the left, please check the bracket indicating the amount of the annual earnings of your spouse (wife or husband) from employment. Check the first bracket (zero) to indicate either that you are unmarried or that your spouse has no income from employment. In the second column of figures below, to the right, please check the bracket indicating the total annual income of yourself and spouse other than your own University salary. If your spouse has a salary from this University, include it in the figure.

Annual Income of Spouse from Employment		IBM Code
None	_____	0
$1 - $999	_____	1
$1,000 - 1,999	_____	2
2,000 - 2,999	_____	3
3,000 - 3,999	_____	4
4,000 - 5,999	_____	5
6,000 - 7,999	_____	6
8,000 - 9,999	_____	7
10,000 -14,999	_____	8
15,000 and over	_____	9

Annual Income Other than University Salary		IBM Code
None	_____	0
$1 - $999	_____	1
$1,000 - 1,999	_____	2
2,000 - 3,999	_____	3
4,000 - 5,999	_____	4
6,000 - 9,999	_____	5
10,000 -14,999	_____	6
15,000 -19,999	_____	7
20,000 -29,999	_____	8
30,000 and over	_____	9

V. (continued)

C. To what extent, in your opinion, does the necessity for you to engege in remunerative activities outside the University interfere with your scholarly work as a member of the University faculty?

IBM Code

No interference from outside activities. . . . . ______ 1
Only slight interference from outside activities ______ 2
Substantial interference from outside activities ______ 3
Very large interference from outside activities ______ 4

D. How many person are at present dependent on you for support (do not include yourself)? . . . . ______

E. How many of your children or other persons dependent on you for support are this year attending college? . . . . ______

VI

A. Have you within the past three years (or during your membership on the staff of this University, if you have not been on the staff three years) received employment offers from other educational institutions or non-academic sources? Please check the appropriate response below:

IBM Code

1. No, I have not received any such offers in the past 3 years . . . . . ______3
2. Yes, I have received one or more such offers, but have rejected them and am remaining at this University . . . . ______7
3. Yes, I have received one or more such offers, and have accepted one, and shall therefore be leaving this University shortly . . . . ______6
4. Yes, I have received one or more such offers, and am still considering one (or more) of them, but have not yet decided whether to remain at this University or not . . . . ______4
5. Indicate any other situation . . . . ______9

B. Are you now actively seeking opportunity for a position elsewhere than at this University? . . . . Yes____(1); No____(2)

C. Would you welcome an offer of a position at another University? . . . . Yes____(1); No____(2)

D. What factors would you consider important in evaluating any offer that might come to you, that would involve your leaving this University? Please rate each of the suggested items below on the scale following it, using the higher numbers to indicate great importance, and the lower numbers to indicate little or no importance. Draw a vertical line through the appropriate number on the scale to indicate your response.

Unimportant ⟷ Important

1. Substantially larger salary than that now being received from this University 1 2 3 4 5 6 7 8 9
2. Fringe benefits, other than salary, such as retirement, insurance, tuition remission, etc 1 2 3 4 5 6 7 8 9

VI. D. (continued)

	Unimportant ⟷ Important
3. Opportunities for research	1 2 3 4 5 6 7 8 9
4. The extent of the normal teaching load	1 2 3 4 5 6 7 8 9
5. The kind of library facilities available	1 2 3 4 5 6 7 8 9
6. The kind of classroom, laboratory, and office facilities	1 2 3 4 5 6 7 8 9
7. The scholarly reputation of the institution making offer	1 2 3 4 5 6 7 8 9
8. The kind of housing available for the family	1 2 3 4 5 6 7 8 9
9. Educational opportunities for children in the family . .	1 2 3 4 5 6 7 8 9
10. Opportunity to be near relatives or other friends . . .	1 2 3 4 5 6 7 8 9
11. Opportunity to live in a different city or town	1 2 3 4 5 6 7 8 9
12. Opportunity to live in a different part of the country .	1 2 3 4 5 6 7 8 9
13. Opportunity to get out of university work and into some non-academic organization	1 2 3 4 5 6 7 8 9
14. Opportunity to take on greater responsibilities and to render a greater service to society	1 2 3 4 5 6 7 8 9

15. List any other:

E. Please list below the names of a few institutions to which you think you might be attracted by the offer of a salary only equal to or a little larger than that you are now receiving from this University:

	IBM Code
. . . .	______
. . . .	______
. . . .	______
. . . .	______

F. Please make any suggestions as to ways in which this University might be made a more satisfactory institution in which to carry on your scholarly activities.

APPENDIX B - TABLE I

New York University Faculty Satisfactions-Dissatisfactions Study: Matrix of Intercorrelations Among Indices Developed from Part II of Russell Questionnaire

	Phy. Fac. (A')	Pers. Serv. (B')	Fac. Pers. Pol. (C')	Faculty (E')	Stud. (F')	Dept. Adm. (D_1')	Sch. Adm. (D_2')	Cen. Adm. (D_3')	Shr. I (S-1)	Shr. II (S-2)	Shr. III (S-3)	88 Item Index
Physical Fac.(1)	-	.56	.42	.30	.33	.30	.50	.55	.55	.63	.46	.79
Pers. Serv.(2)	.56	-	.38	.32	.32	.34	.46	.45	.45	.54	.45	.67
Faculty Pers.Pol. & Prac.(3)	.42	.38	-	.18	.28	.44	.58	.56	.46	.54	.50	.71
Faculty Colleagues (4)	.30	.32	.18	-	.44	.34	.32	.27	.25	.34	.57	.49
Characteristics of Studs. (5)	.33	.32	.28	.44	-	.25	.39	.35	.24	.36	.57	.55
Deptl. Admin. (6)	.30	.34	.44	.34	.25	-	.62	.53	.34	.47	.67	.60
School Admin. (7)	.50	.46	.58	.32	.39	.62	-	.74	.44	.58	.73	.80
Central Admin. (8)	.55	.45	.56	.27	.35	.53	.74	-	.42	.53	.57	.80
Shrinkage Index I (9)	.55	.45	.46	.25	.24	.34	.44	.42	-	.86	.53	.63
Shrinkage Index II (10)	.63	.54	.54	.34	.36	.47	.58	.53	.86	-	.64	.79
Shrinkage Index III (11)	.46	.45	.50	.57	.57	.67	.73	.57	.53	.64	-	.77
88 Item Index	.79	.67	.71	.49	.55	.60	.80	.80	.63	.79	.77	-

SAMPLE SIZE 441

Key to Items in Each Index; for wording see Appendix A

(1) Items 4-21
(2) " 22-27
(3) " 29-42
(4) " 73-78
(5) " 79-86
(6) " 50-51, 60-61
(7) Items 52, 56, 58a, 62, 65, 69
(8) " 58b-c, 63-64, 66-68, 70-72
(9) " 2, 3, 28
(10) " 1, 2, 3, 28, 45-46, 49
(11) " 28, 51, 52, 78, 79

APPENDIX B - TABLE II

New York University Faculty Satisfactions-Dissatisfactions Study: Regression Analysis Data For All Schools Combined

Item*	Cor. with 88 Item Index	Mean	S.D.	Coef. Regr.	S.E. Reg. Coef.	T Value	Partial Cor. Coef.	Prop. Var.	Cum. Prop. Var.
30	.648	4.12	2.18	.059	.015	3.86	.217	.419	.42
72	.623	4.72	2.49	.069	.012	5.89	.321	.136	.56
79	.480	5.04	1.84	.102	.014	7.12	.378	.088	.64
8	.486	4.98	2.57	.066	.011	6.21	.336	.068	.71
43	.494	3.74	2.16	.055	.012	4.65	.258	.036	.75
35	.599	4.31	2.26	.057	.015	3.85	.216	.026	.77
2	.373	4.35	2.59	.037	.011	3.38	.191	.020	.79
44	.427	4.03	1.88	.075	.013	5.71	.312	.021	.81
51	.500	5.99	2.38	.041	.012	3.37	.190	.014	.83
28	.633	3.89	2.32	.068	.014	4.98	.275	.011	.84
1	.510	4.06	2.18	.058	.013	4.31	.240	.008	.85
78	.435	6.21	1.93	.048	.014	3.42	.193	.005	.85
52	.444	5.83	2.38	.025	.012	2.14	.122	.002	.85
3	.468	4.01	2.32	.007	.013	0.54	.031	.000	.85
88 Item Index	1.000	4.96	1.03						

*For wording of items see Appendix A.

Coef. of Determination	.855
Multiple Corr. Coef.	.925
Sample Size	318

Analysis of Variance for Multiple Linear Regression

Source of Variation	D.F.	Sum Squares	Mean Squares	F Value
Due to Regression	14	289.160	20.654	127.29
Deviation about Reg.	303	49.167	0.162	
Total	317	338.327		

APPENDIX B - TABLE III

New York University Faculty Satisfactions-Dissatisfactions Study:
Regression Analysis Data for All Schools with High Morale Levels

Item[*]	Cor. with 88 Item Index	Mean	S.D.	Coef. Regr.	S.E. Reg. Coef.	T Value	Partial Cor. Coef.	Prop. Var.	Cum. Prop. Var.
30	.679	5.51	1.67	.066	.055	1.19	.190	.461	.46
72	.506	6.11	1.98	.117	.041	2.82	.416	.080	.54
79	.523	6.57	1.18	.156	.089	1.76	.274	.092	.63
8	.529	7.32	1.71	.135	.044	3.07	.446	.030	.66
43	.452	4.98	2.29	.009	.036	0.26	.043	.044	.71
35	.638	5.13	2.01	-.006	.047	-0.14	-.022	.033	.74
2	.382	5.66	2.53	.081	.034	2.39	.362	.068	.81
44	.429	4.42	1.74	.055	.046	1.19	.190	.004	.81
51	.338	6.98	1.60	.030	.044	0.68	.110	.002	.81
28	.712	4.92	2.42	.076	.043	1.77	.277	.015	.83
1	.446	6.53	2.12	.082	.042	1.96	.303	.019	.85
78	.478	7.23	1.65	.084	.055	1.53	.240	.011	.86
52	.550	6.08	2.02	.033	.040	0.84	.136	.002	.86
3	.321	6.19	2.28	.020	.041	0.47	.076	.001	.86
88 Item Index	1.000	5.98	1.01						

[*] For wording of items see Appendix A.

Sample Size 53

Analysis of Variance for Multiple Linear Regression

Source of Variation	D.F.	Sum Squares	Mean Squares	F Value
Due to Regression	14	45.998	3.286	16.91
Deviation about Reg.	38	7.384	0.194	
Total	52	53.382		

APPENDIX B - TABLE IV

New York University Faculty Satisfactions-Dissatisfactions Study:
Regression Analysis Data for All Schools with Low Morale Levels

Item*	Cor. with 88 Item Index	Mean	S.D.	Coef. Regr.	S.E. Reg. Coef.	T Value	Partial Cor. Coef.	Prop. Var.	Cum. Prop. Var.
30	.631	3.39	2.11	.062	.026	2.36	[illegible]	.399	.40
72	.630	3.91	2.30	.076	.020	3.87	[illegible]	.146	.54
79	.423	4.66	1.70	.088	.025	[illegible]	[illegible]	.048	.59
8	.325	4.08	2.38	.071	.018	[illegible]	[illegible]	.093	.69
43	.372	3.27	2.00	.080	.019	4.30	.362	.033	.72
35	.568	3.85	2.28	.077	.024	3.18	.277	.019	.74
2	.247	3.62	2.43	.028	.018	1.59	.143	.013	.75
44	.448	3.80	1.91	.078	.021	3.74	.320	.039	.79
51	.478	5.49	2.49	.025	.018	1.39	.125	.006	.80
28	.601	3.27	2.19	.068	.022	3.13	.272	.011	.81
1	.383	3.26	1.69	.083	.026	3.22	.280	.013	.82
78	.324	5.85	1.91	.043	.022	1.95	.174	.005	.82
52	.341	5.25	2.42	.007	.017	0.40	.036	.000	.82
3	.278	3.27	2.03	-.003	.021	-0.13	-.012	.000	.82
88 Item Index	1.000	4.54	0.92						

*For wording of items see Appendix A.

Coef. of Determination	.825
Multiple Corr. Coef.	.908
Sample Size	137

Analysis of Variance for Multiple Linear Regression

Source of Variation	D.F.	Sum Squares	Mean Squares	F Value
Due to Regression	14	94.771	6.769	41.06
Deviation about Reg.	122	20.115	0.165	
Total	136	114.886		

APPENDIX B - TABLE V

New York University Faculty Satisfactions-Dissatisfactions Study:
Regression Analysis Data for Schools with Moderate Morale Levels

Item*	Cor. with 88 Item Index	Mean	S.D.	Coef. Regr.	S.E. Reg. Coef.	T Value	Partial Cor. Coef.	Prop. Var.	Cum. Prop. Var.
30	.518	4.31	2.13	.047	.022	2.13	.197	.268	.27
72	.547	5.02	2.57	.064	.017	3.72	.330	.161	.43
79	.309	4.81	1.89	.095	.020	4.80	.411	.096	.52
8	.326	4.98	2.47	.052	.016	3.31	.298	.043	.57
43	.482	3.73	2.08	.049	.020	2.42	.222	.070	.64
35	.593	4.48	2.23	.047	.023	2.07	.192	.051	.69
2	.282	4.59	2.55	.030	.017	1.71	.159	.024	.71
44	.410	4.11	1.89	.077	.020	3.77	.334	.023	.74
51	.504	6.12	2.39	.062	.019	3.33	.299	.050	.78
28	.556	4.12	2.24	.056	.020	2.74	.249	.014	.80
1	.264	3.89	1.92	.029	.022	1.34	.125	.001	.80
78	.390	6.18	1.93	.039	.022	1.80	.167	.007	.81
52	.538	6.36	2.36	.036	.020	1.84	.171	.006	.81
3	.387	3.90	2.08	.026	.022	1.20	.113	.002	.81
88 Item Index	1.000	4.99	0.84						

*For wording of items see Appendix A.

Coef. of Determination	.814
Multiple Corr. Coef.	.902
Sample Size	128

Analysis of Variance for Multiple Linear Regression

Source of Variation	D.F.	Sum Squares	Mean Squares	F Value
Due to Regression	14	73.594	5.257	35.42
Deviation about Reg.	113	16.772	0.148	
Total	127	90.366		

APPENDIX B - TABLE VI

New York University Faculty Satisfactions-Dissatisfactions Study: Correlations Between 88 Item Index and Certain Non-opinion Parameters

Parameters	88 Item Index	Means	S.D.
88 Item Index	-	5.03	1.04
Years at NYU	.04	4.59[a]	2.02
Amount of Salary	.31	5.12[b]	1.94
Amount of Publication	.09	3.24[c]	2.56
Teaching Level	.17	1.01[d]	0.72
Age	.12	4.34[e]	1.99
Rank	.12	2.87[f]	1.06
Years in Grade	-.02	4.13[g]	3.39

SAMPLE SIZE 441

[a] Scored on a scale of nine class intervals; "4" represented 6-10 years, "5" equalled 11-15 years.

[b] Of nine class intervals, "5" represented $7,000-7,999, and "6" $8,000-9,999.

[c] Of the nine class intervals, "3" represented 5-7 publications, "4" 8-10.

[d] Teaching level was scored as:

Undergraduate only	0
Mixed Grad. & Undergrad.	1
Graduate	2

[e] Of nine class intervals, "4" represented 41-45 years, and "5" 46-50 years.

[f] Rank scored as follows:

Professor	4
Associate Professor	3
Assistant Professor	2
Instructor	1

[g] Actual years in grade.

ASSESSMENT OF FACULTY SATISFACTIONS AND DISSATISFACTIONS THROUGH MOBILITY STUDIES

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ALTHOUGH THE title of this session is "Faculty Satisfactions and Dissatisfactions" I am not going to talk about the factors that do and do not lead to job satisfaction among academic personnel. You, obviously, all have positions in academic institutions and are not unaware of the factors that lead to faculty satisfactions and dissatisfactions, at least in your own institutions. Even if you were not a member of the faculty of a college or university, however, enough prior research exists on the subject of job satisfaction that a reasonably complete listing of the potential sources of job satisfaction and dissatisfaction could be made.

The thing that you probably do not know, however, and the aspect of the topic that I would like to explore with you this afternoon is the extent to which various sources of job satisfaction or dissatisfaction serve as a basis for changing professional positions. To what degree do concerns about teaching loads, bases for promotion, long-run salary opportunities, trends in departmental or institutional reputation, opportunities for advancement, relationships with colleagues, retirement benefits, etc., correspond with one's mobility? Is concern about the lack of strength in related fields or a breakdown in effective communications within a college an important determinant in employability decisions?

We all know, I think, what the potential sources of faculty satisfaction and dissatisfaction are. The thing we usually do not know is the extent to which these sources are operating in more than individual instances and the impact that such factors are having on the overall problems of institutional morale and staffing. In the next few minutes let me describe a series of investigations which have attempted to identify the degree of faculty concern with a wide range of possible sources of job satisfaction and their effect on faculty mobility.

In response to numerous and widespread expressions of concern about potential faculty shortages in higher education during the 60's and 70's, a committee of the University of Minnesota Senate decided to do a bit of anticipating. Working from the point of view that faculty mobility and job satisfaction are inversely related--that is the most satisfied person is the least likely to move--our Bureau designed and conducted a series of four investigations exploring the potential of this institution to attract and hold a top quality staff.

In its broad context, the attractiveness of an institution is not a unitary trait but is, instead, a composite of the perceptions of at least four different groups. There are, first, persons who have recently been recruited and appointed to a faculty. These persons reflect the image of job satisfaction that an institution is able to project to a prospective employee. Secondly, there are persons who have been asked to join a faculty but have elected either to remain in their present position or to accept an alternative offer from another employer. These persons represent something of the other side of the coin and, taken relative to the number of offers made, provide an index of the drawing power of an institution. Thirdly, there are individuals who have recently left a position (say at Minnesota) to accept an appointment with another institution. These persons represent one side of the retentive power of an institution; the other side being individuals who have recently received and rejected an offer from a prospective employer. Taken together these four groups could be thought of as fitting into a 2 X 2 contingency table in which one marginal dimension is the decision to stay or leave a position and the other dimension is one institution versus its competition.

Definitions of Groups

In order to translate these four generalized groups into operational terms for our study at Minnesota, a number of transitional steps needed to be made.

Although it might seem to the uninitiated that a faculty member would be a relatively simple survey unit to define, you, who are more acquainted with the variety of kinds of appointments that an institution might make, realize that this is not an obvious matter.

After arbitrarily defining a period of time during which faculty changes would be considered (18 months just prior to the beginning of the study), a list of the persons whose appointments had been newly approved was taken from the minutes of the Board of Regents. From this list, persons on part-time appointments, instructor level appointees also registered in the University of Minnesota Graduate School, and persons who had been promoted from teaching or research assistantships were deleted. The purpose of these deletions was to exclude persons whose decisions to join the University faculty may have been conditioned by reasons extraneous to the interests of the study. Of the 400 or so names identified, about 150 remained after all exclusions had been made.

The second group in the study was defined by requesting deans and department heads to report the names of persons who had declined offers to join the University faculty. As you might imagine, in an institution where there are approximately 100 departments, each of which has a good deal of autonomy, we found considerable range in the procedures used in making offers to prospective faculty members. In order to accommodate the wide variety of procedures used by various departments, the following definition was suggested:

> For purposes of this study, an offer shall be defined as a statement of commitment by an authorized representative of your department or school, either spoken or written, such that acceptance by the recipient would have resulted in an appointment of that individual to a full-time position, having one of [several specified] academic ranks.

Ninety-three of the 96 administrators contacted, responded, 55 of whom either said they had made no offers or that none had been refused. From the 38 chairmen submitting names, a total of 110 persons was identified. Each person listed was mailed a four-page questionnaire and responses were obtained from all but six persons.

The third group in the study was in one sense easily defined, since it is relatively straightforward to identify persons who recently resigned a position at the University of Minnesota. On closer inspection, however, the matter is somewhat less obvious. Not all persons who leave a faculty are necessarily viewed as losses. Indeed, even among those who leave voluntarily there are occasions when such departures are viewed as mutually advantageous. In order to focus the attention of our study on persons whose departures were viewed as a significant loss, the following guideline was prepared and sent to department chairmen and deans.

> Please indicate the names of former members of your faculty who resigned a full-time position at the rank of Lecturer [and above], who because of their professional competence (or potential), your department would have liked to retain at Minnesota.

Although this definition gave the department chairmen a good deal of latitude in deciding which names would be reported, the definition did accomplish its prime purpose--the identification of persons who the department had most wanted to hold and the exclusion of persons who represented no serious loss. Replies were received from all of the department chairmen and deans, although only 67 names were reported. It may be of some passing interest at this point to note that these 67 persons represented only a few more than half (58%) of the total number of resignations submitted (N=116) during this time period. Questionnaires were mailed to each of the 67 former faculty members and replies were received from 64.

The fourth and final group was perhaps the most difficult to define, for it was composed of persons presently on the faculty who had received, seriously considered, and declined, an offer from another employer. In this group there were a number of obvious complications, beginning with the nebulous question of what is an offer, and ending with the equally difficult question of who, besides the individual faculty member, is likely to know about it.

After some reflection it was decided that although many bona fide offers made to a faculty person may not be brought to the attention of their immediate administrators, it is presumed that if an offer is seriously entertained by a faculty member, it is at some point discussed with his chairman or dean. On the other hand, not all offers mentioned to administrators are seriously entertained. The problem, therefore, was one of structuring a definition which would include offers which were seriously entertained, while at the same time excluding casual inquiries. The following statement forwarded to chairmen and deans seemed to resolve the difficulty.

> Please list the names of present members of your departmental faculty who have to your knowledge, seriously considered (but rejected), a job offer from another institution or employer,....Please limit your consideration to full-time faculty at the rank of Lecturer [or above].

In defining the group in this way, it was realized that some recipients of offers might be overlooked; however, it was assumed that the vast majority of offers which came to a point of serious consideration would be included.

Procedure and Collection of Data

A total of 200 names was submitted by the department chairmen and deans from which a 60 per cent random sample, stratified by rank and college, was drawn. Of the 120 persons identified in the sample, 110 were interviewed. (The remaining 10 were either away from the campus or did not confirm having seriously entertained an offer during the time specified.)

The collection of the data in these four studies involved the use of two questionnaires and two structured personal interviews. Without going into the substantive details of our findings, let me merely suggest the areas of satisfaction and dissatisfaction which our investigation touched, and indicate the variety of approaches which were used to secure reliable and relevant data.

In each of the interview studies, a procedure. generally described as a semi-structured interview, was used. In this approach, the faculty member being interviewed is asked a broad open-ended question such as "What would you say were the reasons that led you to accept a position at the University of Minnesota?" and then allowed to respond in a relatively undirected manner. After the interviewee has completed his voluntary statement, the interviewer then asks about any key points not already mentioned. This procedure allows the investigator to secure opinions on a pre-selected list of questions, with minimal suggestion of preconceived responses or priorities.

Following each interview in our study, the interviewer transcribed his notes which were then typed following a standard format. The typed transcripts were then content analyzed and coded. In order to give you some feel for the manner in which the content analysis proceeded, let me take one item from the interview guide used with persons who had recently come to the University of Minnesota. The broad question asked by the interviewer was, "What would you say were the reasons that led you to accept a position at the University of Minnesota?" Accompanying this question was a list of 14 different areas which were to be included in the response. An example of one such area was the attractiveness of Minnesota's salary offer. If during his voluntary statement the interviewee did not mention salary as a factor in his decision, the interviewer was directed to ask the following question, "Did Minnesota's salary offer play a part in your decision?"

After reading through the 150 transcripts, the following list of paraphrased but typical comments regarding the influence of Minnesota's salary offer on the decision to come to the University was made: (1) the salary offer played no part in decision; (2) the salary offer was a disadvantage in coming to Minnesota; (3) moving costs counterbalanced any salary increase; and (4) higher Twin City housing costs resulted in a real income loss. These responses were representative negative responses to the question of salary as an influence. On the other end of the scale were such responses as: (1) an assurance of regular summer teaching (or a 12 month appointment) made salary a factor; (2) the salary offer was satisfactory for an academic position (as contrasted with a non-academic position); (3) long range potential at Minnesota was better than in another position; and (4) the salary represented a raise over my existing salary (and this was a factor in the decision). These eight paraphrased responses exhausted the range of comments made by the interviewees regarding the decision.

After the codes were established for each area of inquiry, two analysts went through each transcript, coding interviewee comments to each point listed. Having built the codes out of the responses actually observed, it was not surprising that there was relatively little difficulty in classifying individual responses. As you might appreciate, there was a certain amount of squeezing done with some responses to fit them into one of the existing codes; however, whenever the interviewer felt that none of the existing codes really satisfied the intent of the interviewee, a new code was added.

The coding process was, in effect, a shorthand procedure which allowed us to conveniently summarize a great variety of individual responses to a series of rather complex questions. The validity with which this coding was done, I believe, is reflected in our ability to work backward from code sheets to find exact quotations which could be used to illustrate points in our report, and by the fact that in several instances, where interviewees had requested to see the typed and coded transcripts of their remarks, the accuracy of our translation was supported.

Analysis of the questionnaire data proceeded in essentially the same manner as for the interview data, with the exception that several of the items on the questionnaire were prestructured from ideas suggested by the earlier analysis of interview responses.

In addition to the free response data from the interviews and questionnaires, a number of check lists and rating scales also were used. Where similar factors (e.g., departmental prestige and perceptions of colleagues) were approached from both the check lists and the free response procedures, the agreement between the two sets of results was impressive. The only suggestion that respondents might be deliberately "arranging" their comments came, as you might predict, in regard to salary where investigators frequently felt, from the totality of the interviews, that salary considerations were more important than were reported. In most other matters, however, the interviewers' subjective appraisals of the responses of the interviewees supported their validity.

Implementation of Findings

Moving now from the conduct of the study and its findings, which I believe are fairly well described in the report of the study,[1] I should just like to comment a moment or two about the implementation of our findings about faculty satisfactions and dissatisfactions within the University.

It is difficult, of course, to know the full implications of a study like this. A number of changes have taken place since the publication of our report, however, which coincide very closely with recommendations made by the faculty committee sponsoring the study (e.g., improvement of insurance and retirement programs, relaxation of nepotism rules, etc.). In addition, the University Senate has recently appointed a permanent committee on faculty welfare which has taken a number of items for its agenda from the report of our study.

Apart from the implications which our study may have had for tangible change within the University, a number of respondents said they were encouraged by the fact that someone in the University was interested enough in their opinions and problems that they would initiate this kind of study. Even if no other obvious changes ever took place as a result of this study, the mere fact that the study was done suggests to faculty that here is a climate in which faculty opinions are likely to receive a hearing. This may, in the long run, be one of the most significant outcomes of this study of faculty satisfactions and dissatisfactions.

I should not, however, close by leaving you with the impression that, as a result of this study, all faculty dissatisfactions have disappeared at Minnesota. On the contrary, in my opinion the one factor which seemed to stand out as crucial in importance appears to have been relatively unaltered by our investigation--that is the role of the departmental chairman in faculty negotiations. It is, I suppose, too much to expect that the behavior of department administrators would be appreciably improved by simply knowing what factors in decisions are viewed as important and what manner of negotiations are typically effective or ineffective. There was no question, however, that the key figure in setting the tone of a department is its chairman, and the interaction of this person with his faculty is probably the most important determinant of faculty satisfaction, dissatisfaction, and morale.

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STUDENT FOLLOW-UP STUDIES - A RESEARCH DESIGN

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PERHAPS THE best indication of the significance of follow-up studies of college students and of the state of present knowledge about former students is a series of questions and the rhetorical question of "How many of the questions could we in this room answer for our own institutions?"

1. How do our graduates differ from non-graduates ten years after college with respect to earnings, use of leisure, political habits, religious beliefs, use of college-inculcated skills and emotional development?
2. What elements within a collegiate educational experience seem related to the activities and behavior of former students?
3. What opinions do former students have about their collegiate experience, instruction received or counsel obtained?
4. What vocations do college graduates follow and what relationship do these have to subjects studied?
5. What are the vocational careers of former college students who did not graduate as compared with those who did?
6. What differences are there between the post-collegiate lives of people who attended one kind of an institution and those who attended different types?
7. In the college-educated population which appear to be the most significant influence on behavior: pre-college, college or post-college experiences?
8. What are the differences between former students who do and do not help support the institutions from which they graduated?
9. How do recent graduates differ from older graduates with respect to attitudes, beliefs, vocations and behaviors?

These are all kinds of questions which a business would seek to answer regarding its product, yet which collegiate education has, with a few marked exceptions, failed to ponder. Or if an institution has sought answers, it has done so only for a restricted class of questions. Virtually every spokesman for public junior colleges claims that the technical-vocational part of the curriculum is significant, yet data are available for only those students who transfer to a four-year institution. Liberal arts colleges typically send a relatively small proportion of their students to graduate school yet these are the only ones about whom the institution has descriptive follow-up data.

The purpose of this paper is to present some ideas for a research design for follow-up studies. As a background for such a presentation it may be well to examine some studies which have been made so that both the strength and weakness of those efforts can instruct future attempts to understand the product of collegiate education.

Past and Present Follow-up Studies

One of the most widely quoted follow-up studies was that done by C. Robert Pace and described in They Went To College, University of Minnesota Press, 1941. Pace used an attractively produced questionnaire of fifty-two pages to obtain information from 951 former University of Minnesota students who entered college in '24, '25, '28 and '29. This revealed the rather disturbing finding that there were few if any differences between students who graduated and those who did not graduate with respect to civic activities, use of leisure, home and family living, and occupations. Pace himself has subsequently remarked that while he was generally satisfied with the study as he made it, he would not attempt another until newer and better methodologies were available for such an inquiry.

A decade later Ernest Haveman and Patricia West used the same title, "They Went To College," to report on what at first was intended as a study of readers of Time magazine but which eventuated as a study of college graduates. Their study was based upon questionnaire replies from 9,064 college graduates believed to be representative of all graduates of American colleges and universities. Since the authors received a fifty-nine per cent return of the questionnaire this may be a questionable belief; however, the returns were typical of the majority of questionnaire studies. If the sample is even reasonably representative, the report reveals some interesting but not too surprising things about college graduates. It is the school attended, not the courses attended, which is most highly related to post-college earnings. Those who worked their way through college earn less as adults than those who were supported by their parents. Generally, except for the very recent college graduate, the respondents were conservative in their political and economic outlook. They are evenly divided in their beliefs about race with about a third being tolerant, another third prejudiced, and the last third ambivalent.

Perhaps the biggest weakness in the entire study lies in the treatment of the data. Thus it finds that those students who were most conscientious about their school work tend to earn higher salaries later on than do the all-round students, the big men on campus or those who just existed. These figures could only be meaningful had they been analyzed in the light of the kinds of colleges related to subsequent income. It might be that the prestige colleges demanded more work but that the relevant factor was the prestige of the institution.

Two different kinds of follow-up studies are reported by Paul L. Dressel and his associates in Evaluation In The Basic College. The first, conducted by means of correspondence and telephone, attempted to discover why students in good academic standing dropped out of Michigan State University. According to this study, desire to transfer to another school led the list of reasons, and about a third of the drop-outs hoped to return to M.S.U. It was the implication that possibly sixty per cent of drop-outs in good standing might be expected ultimately to finish their education; this implication led to later studies of this matter. The second study was one which was done routinely each year to determine the attitude toward the program of general education of all students who graduated that year. A brief, eight item questionnaire was sent to every graduate within a week after commencement. Slightly over fifty per cent of those sent the questionnaires returned them each year. In general the results were supportive of the separate basic college and of the required program of general education but critical of the teaching and of the examination system.

As part of its continuing evaluation of itself, St. Scholastica made an elaborate questionnaire study of all of its graduates after fifteen years of collegiate existence. The results, presented in The First Fifteen Years, were used to refine and reform the program of the college. To determine whether or not the reforms were effective, a similar inquiry was made ten years later of all of the graduates who finished college during that period. Both studies relied on richly illustrated questionnaires. Typical of its findings are general satisfaction with the education St. Scholastica provided but general dissatisfaction with reconciling ethical and religious beliefs taught by the college with the press of contemporary culture.

A different method for follow-up study is involved in Jeanette H. Eilenberg's Brooklyn College - Class Portrait 1953-57. She began collecting data--questionnaire responses and interview impressions--for all freshmen in the class of 1957 when they entered school and at periodic intervals throughout the succeeding four years. She concerned herself with such things as parental education, religion and socio-economic characteristics, student use of time, cultural preferences, and attitudes toward the college. Although Brooklyn is atypical to the majority of American colleges, the results of this study, when compared to the results from many such studies reported by Philip E. Jacob in Changing Values In College, reveal the Brooklyn-grown college student and graduate to be remarkably similar to his counterpart found outside the metropolitan New York area.

Perhaps the prototype for intensive studies such as the Brooklyn inquiry is the study conducted by Theodore M. Newcomb of the students from several of the early classes at Bennington College, Bennington, Vermont. The results of the first part of the study are reported in Personality and Social Change and are based on records--testing and annual questionnaire data--for all girls in the class for each year in which they were in school. The overarching finding is that student political attitudes changed enormously during the four years at Bennington. Currently the same women are being studied twenty-five years later by means of an intensive questionnaire and interview (some lasting four hours or more). The tentative findings, although not as yet published, reveal the Bennington women to have retained the changes in attitude which took place during their collegiate years. Although they represent a segment from the socio-economic spectrum which is normally conservative and although their husbands are inclined more often than not to be Republican, these women tend toward liberalism and toward membership in the Democratic party.

More modest in scope and representing a different facet of follow-up studies is "The Study of Yale Club of New York Awardees - Classes of 1954-63." This study was based on the institutionally recorded data for those Yale graduates selected for this honor, which goes to those having had the highest freshman year scholarship records. Two-thirds of those receiving the awards came from public schools. They had high predictive indexes when they entered Yale and their subsequent performance compared favorably with their freshman records. Paul S. Burnham also studied the relationship between "Academic Success and Career Choice," College Board Review, Fall 1961, pp. 22-23. Those graduates who as students earned the highest academic records were more likely to have had military experience as commissioned officers, taken advanced degrees, published more books and articles, and entered the professions more frequently than were those who ranked at the bottom of their class. The data upon which the comparisons were based were culled from reports from class histories. However, comparisons were also made between college achievement and the predictive index established for admissions purposes. This revealed that the high achievers had had high predictive indexes.

Possibly the most elaborate follow-up studies to have been conducted are those of Vassar students. Three different classes were retested with a test battery either three or four years after graduation. The instruments used were the California E and F scales, the Vassar Social Maturity Scale, and the Tolerance Scale of the California Psychological Inventory. Most of these alumnae were tested after arrangements were made by correspondence but a few for each class were tested at alumnae reunions. The results showed many things, one of the more important of which was the differences in alumnae depending on when they were in school. Whether or not these were differences while in school is unfortunately not known. (Marvin B. Freedman, "Studies of College Alumni," in Nevitt Sanford (ed) The American College.)

The Center for the Study of Higher Education at the University of California, Berkeley, is conducting a number of studies which are follow-up in nature. In one, to be reported in June 1963, students from junior colleges in California, Florida, Georgia, Illinois, Kansas, Michigan, New York, Pennsylvania, Texas, and Washington who transferred to four-year institutions are being studied. The purpose is to account for the marked variability in performance of junior college students after they transfer to senior institutions. The basic technique is comparing matched pairs of transfer and native students. In another study 10,000 high school graduates from the June class of 1959 are being followed with respect to their socio-economic backgrounds, cultural values, personality, and initial post-high school activities. They will be followed through their collegiate careers or for a comparable period for those not attending college. An especial focus of the search will be those background factors most significant in predicting success and persistence in college.

One last example in this resume of some follow-up studies goes back to earlier types of study. A questionnaire, with many items written to compare with a federal study, is being sent to all Stephens College graduates from the classes of 1930, '35, '40, '45, '50, '55, and '60. Evidence is being sought as to the kinds of lives Stephens graduates are now leading, what their work experience and educational experience has been, and what their most bothersome personal problems or concerns are. The questionnaire was pre-tested at an alumnae reunion and was mailed to the full population in March 1963. An important theoretical problem was resolved in favor of sending the questionnaire to all graduates rather than to a carefully selected sample.

While follow-up studies are by no means plentiful, those cited possibly provide the flavor typical of the genre. The Gesell studies of child development could have been cited as could the continuing studies initiated by Terman in the 1920's. Similarly the growing number of inquiries into the nature and characteristics of college students might have been used to illustrate particularly methodology having relevancy for follow-up studies. For example, the Rose K. Goldsen, et al., analysis of What College Students Think and the Yale University, Division of

Student Mental Hygiene study of Psychosocial Problems of College Men seem particularly timely. Perhaps in the discussion of the panel members some of the substance of such reports can be aired.

Weaknesses in Past Follow-up Studies

There are a number of weaknesses apparent in the majority of follow-up studies of the sort considered here. First, there is a general reliance on paper and pencil questionnaires. Now questionnaires are favored because they are less expensive than other techniques, because they do provide data which can be treated quantitatively, because they are adaptable to uncovering certain kinds of information, and because they can be used with larger populations than could be studied in other ways. However, the exclusive use of a questionnaire leaves bothersome questions unanswered. Since typical responses from questionnaire surveys hover around the fifty per cent point, one is always perplexed as to the characteristics of those who did not respond. Since rarely are sufficient other data available to test for the comparability of the non-responding group to those who replied, one must always be somewhat uneasy with resulting generalizations. Further, questionnaires state things in the starkest prose possible to avoid ambiguity. This very starkness of language denies questioning about a number of matters which should be of important concern to college professors and administrators. For example, one can ask for indications of vocations, salary and even religious practice. But how many of you would feel free to answer on a questionnaire such items as:

1. How many times in the past five years have you seriously considered suicide?
2. What variations of technique do you currently practice in your marital sex life?
3. If the best advice available to you told you that minority groups moving into your neighborhood would reduce the value of your home, would you take an active role in encouraging non-discriminatory legislation regarding sale or rental of property?

There are ways of obtaining answers to such questions but the questionnaire is not the best.

In another vein, questionnaire data so frequently leave unanswered the dynamic elements which would make the objects of study come alive. Thus one can get estimates of the number of books, records, paintings, and the like found in the home. Yet the quality of these, the uses to which they are put, the intensity of feeling about them can never be assessed by such a manner. A long time member of a book club may have several thousand volumes of books in his personal collection just as a university library may have several million. Knowing this is important, but one would also like to know whether or not the individual has a passionate or even erotic feeling toward his books or whether the books in the library are actually used and if so how. All of this is not to deny the questionnaire an important place among the tools of follow-up study. It will and must continue to be used, but one would hope that so would other devices.

A second weakness is that with rare exception there are unavailable data from the college years about graduates studied in a follow-up inquiry. It is only in the Bennington study that a major effort has been made to secure information from graduates about the same matters concerning which undergraduate data were obtained. It may be that as follow-up studies become more the rule and as the truly important factors become better known, this lack will be rectified. Actually, as officers of institutional research ponder the data they should collect about entering students, at least one eye should be kept on the research needs for the future.

Now obviously the chief reason for collecting data concerning students in college is to enable wise decisions to be made about them. However, one could argue that data which are truly important for this purpose will also be of significance for follow-up studies. The most frequently used form for application to college provides an abundance of information largely irrelevant to follow-up studies. In some analyses done at Stephens College, these data were also irrelevant to the problems of students in residence.

A third criticism of follow-up studies reported to date is of their pre-occupation with socio-economic data and political belief and behavior. It is paradoxical that college faculties, which verbalize the valı of the humane life, generally advise students by first inquiring as to what vocation they propose following. Then on follow-up studies they inquire about professional schools attended, the vocation currently being followed, the kind of community in which they live, and their economic status. It would seem that if a college is interested in finding out about its graduates it ought to probe for information on the variety of attitudes and behaviors which colleges presume to affect. Colleges postulate a number of objectives some of which might be (1) to develop in students a tolerance for ambiguity, (2) to develop in students a greater regard for self, (3) to develop in students an openness to experience, and (4) to develop in students the ability to think critically about themselves and the world in which they live. While the Vassar studies had begun to seek evidence concerning some of these, other attempts are rather difficult to discover. Again a disclaimer must be injected. Socio-economic data and political behavior are important and deserve to be assessed in graduates. But other things are equally important.

Another weakness must be mentioned which perhaps can never really be corrected. This is the inability of currently employed techniques to discriminate between collegiate and post-collegiate experiences in determining behavior. Consider if you will a follow-up study made of the college classes of 1940 and 1941 accomplished in 1950. Of the portraits, the study revealed which elements might best be attributed to the collegiate experiences and which to the war years. Even with less monumental intervening experiences than war, the task of deciding whether early years of work, of marriage, or of classes in the parental family were more or less related to adult behavior than were the collegiate experiences is a major one. The use of adequately large control groups might alleviate some of the difficulty as would also more searching techniques for gaining information.

A fault not only of follow-up studies but of educational research generally is the lack of common terminology and the lack of a common set of concepts which could make studies from one institution comparable to those at another. Some years ago, Bloom and other university examiners attempted to provide a common language through a *Taxonomy of Educational Objectives*. They published the first of what was expected to be a three part project. Unfortunately, only the cognitive domain has been treated, leaving to the future discussion of the affective and the psycho-motor areas. Recently, the Educational Testing Service has been studying biographical data forms in the hope of creating a common set of rubrics which could be used in all institutional research studies. With the exception of these two efforts, nothing is available to aid the researcher in evolving instruments which will make his results comparable to those of others. It might be well for an organization, such as this group of institutional research workers, to begin a systematic standardization of terms and methods. If this were done, the fugitive literature about such things as follow-up studies might provide genuine insight into the effect of education.

Lastly, although certainly related to the previous point, follow-up studies have been less than completely successful because they rarely have been conducted on the basis of a consistent theory. Freedman's studies at Vassar, of course, were made out of a neo-Freudian theory of personality and for this reason alone are of probably more lasting significance than the others. If an institution were to attempt a follow-up study, it would be well for considerable time to be spent on a theoretical formulation before attempting to discuss technique or instrumentation. Even if the theorizing simply resulted in a restatement of the goals of general education, the resulting instrumentation would likely be of more lasting educational significance than would instrumentation created in response to the question, "Wouldn't it be interesting if we knew this about our graduates?" The more refined the theoretical base, of course, the better.

Design for Follow-up Studies

In the light of existing studies and a serious consideration of their strengths and weaknesses it is possible to suggest a large design for follow-up studies and to suggest palliatives which might improve studies less pretentiously conceived.

The first essential for a major follow-up study of collegiate graduates should consist of a tenable theory on the basis of which hypotheses can be invented and ultimately tested. This might involve a process, such as that described by Dressel and Mayhew in General Education: Explorations in Evaluation, by which generally accepted objectives of general education were specified in behavioral terms. These in turn became the specifications for the 17 testing instruments which resulted. Or it might involve more complicated theories. George Stern, combining the concept of environmental press developed by Murray and the concept of authoritarianism, created the College Characteristics Index and the Stern Activities Index. With these he has been able to assess with considerable reliability the mesh between individual personality and the collegiate environment. The same rationale and even the same instruments have application in a follow-up study. The age and stage notions of human growth and development, basic to the Gesell studies of children and youth, also could be adapted to provide follow-up studies a broader meaning.

Perhaps the first element of a theoretical base for a follow-up study is the nature of a collegiate institution. It is in its starkest form a social institution designed to induct the young into the adult culture. It does its work along with other social institutions such as the family, church, military establishment, business community, and the stock market. Each has its own primary responsibilities which, while varying from time to time, are relatively fixed at any given time and for particular sectors or classes of society. These responsibilities should be isolated in the most parsimonious fashion possible so that a follow-up study can be used to examine only those outcomes of education which are clearly relevant. The religious beliefs and behaviors of people, who have spent their entire academic lives in secular institutions, is clearly not a subject which should concern a research work. Neither should an individual's recreational life be of concern unless it is a matter, as it is at the federal military academies, to which the college devotes serious attention. At the present, American colleges and universities have primary social responsibility for preparing students for a vocation, for transmitting to them certain parts of the cultural heritage, for providing them with certain intellectual skills by which they can solve problems, and for developing a limited and identifiable set of tastes, values, and appreciations. These should provide the substance out of which a follow-up study should emerge.

Collegiate institutions function in a cultural environment in which the impact of all other experiences of the young very likely outweigh the impact of the college. Thus college students in the 1930's were conditioned by the facts of a depression and of a democratic society seeking to prevail under technological conditions antithetical to it. Students in the 1940's were conditioned by the facts of war while those in the 1950's were conditioned by social affluence. These forces are probably more operable in an individual's later life than what he experiences in college as a result of a planned collegiate program. Thus studies of graduates from the depression years would probably find that the economic insecurities of those years are more responsible for a middle-aged attitude toward security than courses taken in college.

Thirdly, one can argue that all individuals proceed through life in a series of developmental stages each having discrete physical and psychological characteristics which obtain for relatively large numbers of a given age group. Gesell has described these ages and stages for children and youth. It is possible to speculate that similar periods are identifiable for adults and that these periods may be more responsible for particular behavior than the influences of an earlier inductive experience in a college or university. This factor has several implications. If an institution is interested in the impact it has, it should study graduates close enough to their college experience so that results are not contaminated by later stages of development. Secondly, if studies are made of graduates in later years, and there may be reason for doing so, adequate accommodation should be given to the influence of that age or stage on behavior.

One last element of theory should be mentioned. Not only are the behaviors of people determined by the times in which they live and the stages through which they grow but also by basic personality structure which is formed early in life and persists. Evidence is beginning to mount which suggests that students self-select themselves into and out of colleges which are compatible or incompatible with their own personal orientations. Thus students with a strong drive to be with people select a socially oriented school while those interested in academic work select other kinds of institutions. In very real effect, the result of a collegiate experience may be much less the result of what happens in college than it is the result of a person's basic personality which led him to a particular college or university.

These particular considerations may or may not be the proper ones. They have been presented to suggest that follow-up studies of people are both simpler and more complicated than has typically been implied. They are simpler in that only a limited range of behaviors are truly the responsibility of a college. They are more complicated in that they must account for other potent forces which affect human behavior. Until such factors as these are considered, results from follow-up studies will continue to be as inconclusive as they have been in the past.

Once a general point of view has been established, a follow-up study can be designed which should involve all of a number of devices:

1. Intensive testing of students before they reach college, at various periods throughout their collegiate careers, and on into adult life. To this end, there is need for a variety of short tests of knowledge, attitudes, academic aptitude, and even personality. In the case of group testing, instruments which were longer for the

purpose of reliability can be shortened.

2. Accumulation of biographical data. Not only should basic biographical data be collected but it should be recorded in such a way that the subsequent history of the individual can be added. Thus such matters as change of preference during college years should be recorded so that the relationship with earlier school and life experiences can be studied.

3. Intensive interviewing. Not only should students be interviewed but so should graduates. This is an expensive activity but one which is essential if an institution is truly serious about determining its significance in the lives of its former students.

4. Cooperative effort. The insights of a variety of social scientists should be used to place whatever is discovered into a more adequate context. On every college campus there are historians, sociologists, psychologists, and political scientists who could provide the backdrop against which the descriptive data can be viewed. Too frequently, in studies reported, such matters as precise historical information have been overlooked. What is being called for here, of course, is the utilization of the full research potential of an institution rather than just that of an office of institutional research.

Remarks thus far have implied an elaborate follow-up study seeking to determine as precisely as possible the true impact of college on human behavior. If this is the intent of an institution, the effort must be made. However, some purposes can be served by less intensive efforts. One institution may want to know in what occupations products of a school of journalism are engaged. Another may wish to discover the number of daughters graduates have so that a student recruitment campaign may be begun. Or another may simply wish an up-to-date registry of former students. Such matters do not need an extensive theoretical formulation nor do they require elaborate data collecting devices nor procedures for the treatment of data. To accomplish such studies, a simple questionnaire may be sufficient or some adaptation of one or several other devices such as:

1. Group interviews with returning alumni. If each year at reunion time one or two groups of alumni were invited to return a day early to be interviewed about themselves. a college could gain considerable knowledge which could be of use.

2. Depth interviews with graduates in their homes. Virtually every college sends representatives to meetings of all sorts. If every such representative could be asked to interview for at least an hour a former student and prepare a written report, within a few years a sizable body of knowledge about graduates would result.

3. Telephone interviews. If there is a substantial number of graduates living in an urban area, considerable information can be accumulated relatively inexpensively by telephone. Several housewives paid at a rate of twenty-five cents a call could obtain more precise information quickly than could a questionnaire. Besides, the fact that one never knows about the non-respondents in a questionnaire study is not operative.

4. Analysis of correspondence. Yearly there flows into the various offices correspondence from former students. While much of this is concentrated in the alumni office, other centers receive their share. The substance of most such letters is transitory, hence the documents are not needed for permanent files. If a procedure could be devised so that all such correspondence could be collected and quantified, another

way of knowing about graduates would be available. Intelligent part-time student help could be trained to make such content analyses; hence the cost for doing such studies would not be great.

Higher education in America has been long on theory and speculation but short on empirical data concerning its operations and its accomplishments. Gradually this picture is changing as data are gathered routinely about cost per full-time student, space utilization, and faculty load. As time goes on, the significance of data about graduates will appear greater if only for the purpose of justifying rising collegiate expenses. When that time comes, yearly summaries about graduates will be as routine as yearly lists of academic aptitude test scores are now. Before that time arrives, considerable thought should be given to the issues this panel and group are to consider.

COMMENTS ON STUDENT FOLLOW-UP STUDIES*

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ALTHOUGH DR. MAYHEW has not presented the grand design for student follow-up studies which frustrated researchers like me have hoped for, he, like Stanford University, covers a lot of ground and erects a great variety of fascinating facilities. In commenting on such a paper, the temptation is to take a biased sample of the points made, and comment, as if sagely, on each in turn. For example, I should dearly love to take issue with the emphasis on interview data, for I do not know how to solve problems of bias or treatment of data. But your opinions, as mine, are preformed, and there is little to be gained by side-taking with you and/or Mayhew.

To dispose nicely of this temptation, it may merely be said that some of the notions are ingenious, some creative (a dangerous term these days), some courageous, and some incredible. Yet, running through his comments is one stark conviction that is all of these things. This is that college may not be the source or catalyst for all personal qualities and attainments our culture defines as valued and that, if it were, assessment does not derive from polling the cooperative 50 per cent of the alumni for a few kinds of data easy to come by, such as marital status, number of children, or job title.

A review of the research (see, for example, Freedman's chapter in _The American College_) proves quickly that Dr. Mayhew has risen significantly above the rest of us in this fascinating speculation. It may be useful to summarize the sources of variation among adults which may plague those doing evaluation studies by follow-up of alumni.

The first of these may be called the _origin and early life_ factors. The vistas of opportunities open to a person are determined in large part, in spite of our Horatio Alger myth, by the socioeconomic limits of the parents, _their_ intelligence, _their_ values. Some capacities such as general intelligence come primarily from the parents, and may be expected in and of themselves to affect attainment. And certainly there are ample data to show that the formation of basic personality characteristics and many attitudes--from work habits to reaction to authority--are developed and stabilized before college gets a crack at a portion of the population it considers congenial to its peculiar vested interests. Though the Bennington studies have shown, for example, increasing liberalism in political preference emerging over the college years, one may well wonder if this liberalism extends to child rearing practices or the ritual of being presented to society. Only when an institution has an undeniable, forceful, and pervasive commitment in its faculty and program would it seem reasonable to attempt to attribute such adult personal adjustment patterns to college experiences.

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*A summary of comments about the Lewis B. Mayhew paper, "Student Follow-up Studies - A Research Design."

A second category may be entitled the Era or nature-of-the-times factor. Young people growing up or graduating in depression or war times have observable, predictable attitudes and mores; one learns this through broad social-cultural historical analyses. Here again the point is to expect that some characteristic adult patterns are more influenced by ubiquitous television or ease of travel than by four years at Siwash. Mayhew's argument for utilizing specialists from the faculty in follow-up studies has real meaning here: the sociologist, the ecologist, the political scientist, the historian have a contribution in separating era impact from college impact.

A third kind of force that needs identification consists of those benefits that may accrue purely from the status of a college degree. Special and ingenious study needs to be conducted to determine what values derive from the baccalaureate stamp of approval. Even speculative analysis of follow-up studies in this regard--or their planning with this in mind--should pay off.

Fourth, and crucial for our purposes, are those changes that the college experience itself can and should be expected to induce. To contrive a reasonable set of criteria is an exercise in self-control and restraint, ability to recognize one's personal biases, and capacity to accept reality. We can start with subject matter--those enduring aspects of knowledge and skills we deal with openly, devotedly, and continuously. This is not necessarily saying that end-of-term tests, senior comprehensives, or standardized achievement tests should be administered at the five year reunion, although if we really get down to courageous simplicity we may try this. I've wondered, however, what we might find if we commissioned our faculty to write questions drawn from their course units but to be administered five years after graduation. What should those in Philosophy 207 or Political Science 101 do at age 25 or 30 which may distinguish them from persons who did not have that experience?

Thus far in this conference we have demonstrated that we tend to view the faculty as incompetent, individualistic or eccentric, impractical trouble-makers who at worst must be patiently contained or at best can be safely ignored now because we are on the side of and part of the administration. Such a view is not only unfittingly pompous at our present meager state of professional competency, but also suicidal if we are to understand and facilitate the improvement of the educational experience. Some of our faculty may have ideas worth noting if we can give them something in which to sink their hearts rather than their teeth.

Although comments about origin, era, and status factors against the plea for assessment of growth related to the academic experience might imply blindness to other more general college-derived competencies, there is a case for the expectation that a person with four years of study, reading, and getting excited about issues, may approach life with a higher order of reasoning than can be demonstrated in the context of a course or discipline. Here goals need to be spelled out carefully; Mayhew has suggested several good ones, such as "tolerance for ambiguity," or "openness to experience." The trick now is to find some way to test such qualities, to relate them to college experience more specifically than to other sources which might nourish them as well, and ultimately to find some convincing argument for their value rather than to assume, childlike, their goodness: tolerance for ambiguity could have catastrophic effects, for example, on performance in some adult work roles.

Finally, the chance or contingency factors are always with us. My most illustrious classmate heads a multimillion dollar pharmaceutical house because of the untimely death of a mad uncle who took the immediate heirs with him; the classmate I had suspected would snare early prominence in American Men of Science was struck down by a hustling cab driver in Washington Square. Less dramatic events, such as the choice of job offer X over job offer Y, can also cause qualitative variation in graduates.

There may be other major sources of variation in criteria which we may generate to express important differences among adults (for example, physical health or choice of mate). The significant point that Mayhew has made is that we have generally accepted college as God, failing to render unto Caesar that which is Caesar's, particularly when we value Caesar's contribution. College may have little real impact other than providing, for some, a pre-apprenticeship training, but avoiding the real issues and focusing pristinely on outcomes we should like to take credit for or on simple, accessible facts we can count, is dishonest, time consuming, delusive, and sterile.

A second general area for summary comment is that of technical design of follow-up studies. After the formulation of theory, the redefinition of college goals, and the creation of criteria to reflect these, and before testing our alumni, we must test our entering freshmen. Growth involves change; evaluation generally must be based on before vs. after measures. It is remarkable that we always assess at the end and seldom at the beginning of a course or a curriculum. Mayhew's appeal for measuring with the same stick but at different stages cannot be over-emphasized.

Another necessity of design, and one harder to come by, is what Mayhew has called the control group. Some years ago every college that contrived a rapid reading program noted phenomenal gains, no matter what techniques were used. Most of these pioneer hopes washed out when those students who had not taken the special work were tested as well as those who had. Certainly many of the changes we should hope to find induced by college may result from extra-college experiences; maturation is not the priority of the college-going. Many of the things believed to be created by college experience may be already there or germinating. Those lasting and enduring competencies and attitudes cited in the usual statements of objectives are also nourished by other parts of society; the church, work, the press, the experience of parenthood, the rewards and punishments of life all have instructive value.

Obtaining a control group is difficult. One must approach, at the onset, individuals for whom the college has no responsibility and little rapport. The fact that their make-up and decisions are not such that they are part of the student body may make it impossible to establish a group similar in every important respect except for sustaining the college experience. Those who choose a particular college are probably different from those who choose another; those who seek college have different needs, values, and behavioral patterns from those who do not, and these very characteristics may produce some of the later accomplishment for which we ourselves should like to take credit. Nevertheless, the advantages of partial solution outweigh the limitation when no such comparisons are possible.

The strength felt from the numbers attending this conference and the other signs of creeping professionalism that will be evident at our business session can be justified if planning as well as data are shared. In follow-up studies, it is frequently instructive to compare our product with those of other institutions which may be likened to or contrasted with ours; comparisons can be sharpened if we can begin to share some elements of good design and some measuring instruments, as well as companionship. For a long time, colleges have not had the courage to explore such questions except where prior experience indicates they will not suffer in the comparison, but we have shown some signs of growing up.

Finally, it may pay rich dividends if in follow-up studies we consider intra-institutional differences. The college experience is different for young people vs. adults, for full-time vs. part-time students, for students sitting at the feet of professor X vs. those sleeping through professor Y's lectures. The fact that these differences may be more readily manipulated (we can try a new program or approach, then test again) means that we may find opportunities for fruitful experimentation.

Thus, our problem is not so simple as administering some little jim-dandy achievement tests after a period of time (although tests such as those available in the National Guidance Testing Program are constructed for this purpose, and have real value). A number of researchers at ETS and elsewhere are struggling with formulation of goals appropriate to colleges in general, and are attempting to find more sophisticated ways to measure value development and attitudinal change, or to establish useful and sophisticated criteria of success in life and in work which may be reasonably related to educational experience. The biographical inventory Dr. Mayhew has cited is well into pretesting stages, and "normative" data for a range of colleges and at freshman or senior levels will shortly be available. But the value of good follow-up data, the uniqueness of each institution, and the time and many elements involved, indicate it is not too early to start work.

I take it that some persons are not at all convinced we are ready to do anything but to choose among returning to teaching, sneaking into administration, or holding pat as long as the present administration is in power and enjoying the vistas from our windows as our clerks take over our work. They are, of course, eminently correct; I can cite no data in disproof. However, the search can be fun, and can challenge the best in us for the rest of our lives. I believe that, as a profession and as individuals in that profession, long-term survival is not a function of the volume of necessary but temporal housekeeping research done, but of the degree of success in identifying and evaluating the changes that college induces in students. What colleges do to students is the most basic question facing us; an effective solution provides criteria against which all other facts and factors we deal with can be examined.

BUDGETARY IMPLICATIONS OF FACULTY LOAD STUDIES

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FACULTY LOAD studies have many and varied budgetary implications, in addition to many other uses in the administration of a college or university, but I have no intention of attempting a systematic description and analysis of all the budgetary implications of faculty load studies. The focus of our conference this year is on future planning (by which I think we meant planning for the future, not planning in the future) and I plan to restrict myself narrowly to one particular use to which faculty load studies can be put in this area of planning for the future.

Having narrowed my subject in a way which is probably not consistent with the Planning Committee's goal in assigning me this topic, I now want to broaden the definition of faculty load studies to include not only the traditional study of the apportionment of the faculty members' time among teaching, research, administration, public service, etc., based on forms filled out by the individual faculty member and/or his departmental chairman or dean (we at California also indulge in this type of study to the annoyance of our faculty and the frustration of my staff), but also to include studies based on the instruction actually given by the faculty and other members of the teaching staff as reported in records collected by the registrars. We are now combining the results of these two types of faculty load studies in ways which seem to be providing solutions or at least to be pointing the way toward solutions of some of our knottiest problems in the area of budgetary planning.

Some of you may not be faced with these problems, in which case you will have only an academic interest in my remarks today, because I plan to confine myself to a statement of one problem at our "Multiversity" and a description of our attempt to solve it based on faculty load studies in the two senses described above.

The Problem

The problem is in one sense a very simple one. It is to find the optimal allocation of the limited resources which the University can expect the State to make available to it in the next two decades, to educate those among the top 12-1/2 per cent of California's high school graduates who choose to come to us, to provide professional and graduate instruction especially at the doctoral level to the accelerating number of Californians and qualified students from other states and nations who will seek more specialized or advanced training, to continue to push outward the frontiers of learning, to assist agriculture and industry in achieving greater efficiency, and to provide opportunities for adult education, both intellectual and cultural. To meet this challenge, the University has planned to continue and accelerate the shift in emphasis at Berkeley and Los Angeles from undergraduate to graduate instruction; to develop the Davis, Riverside, and Santa Barbara campuses into well-rounded institutions of limited size with professional schools and graduate programs offering the doctorate in most areas of study; and to develop three new campuses at Santa Cruz, Irvine, and San Diego, each designed for ultimate capacity of 27,500 students, each with a broad range of instructional programs at all levels, but each having a distinctive approach to the common goal of achieving excellence in education.

We in the statewide administration of the University have the task of finding a method of allocating the funds made available to us by the State among the nine campuses, which are experiencing growth at quite different rates and of quite different types. Those of you who are especially good at mental arithmetic may have noted slyly that I only named eight campuses whereas now I speak of nine. The ninth is our San Francisco Medical Center, which leads me to interject that in addition to San Francisco and the heavily research-oriented medical center at Los Angeles, we are now planning medical centers at San Diego and Davis. We know full well that if we added together the well-documented and fully justified needs which each campus could present to us, the total would far exceed the funds which are going to be available. To anyone trained in economics, the problem seems to cry for a pricing solution, but for obvious reasons such a solution is not available. If then we must ration resources in a way which will meet the needs of each campus to the greatest extent possible within the bounds placed by the available resources, but without giving any campus any undue advantage or placing any one campus at a particular disadvantage, it is essential to have some objective measure of need. It has seemed to us that one measure, perhaps the only practical and reasonable measure of need, is cost; not, of course, actual cost or projected cost based on program plans designed to provide the best in education regardless of cost, but some normative or standard cost which reflects the impact of those underlying variables which are at work in this industry which we call higher education.

What then are these variables? Each of us would probably come up with a different list, but I will suggest four: (1) the total number of students on the campus, (2) the mix of the students by level of instruction, (3) the mix of the students by program, and (4) the quality and/or method of instruction.

My colleagues on the faculty at Berkeley insist that the University is not a factory, that we do not simply produce graduates or Student Credit Hours, and I agree fully and wholeheartedly. Nevertheless, I think it may be useful for our present purposes to draw a parallel with industrial operations. The number of students is a measure of the volume of operations, and we know that costs usually vary significantly with the level of output. Students at various levels of instruction can be likened to a product going through various stages of production. Some of you may argue that education is or at least should be a continuous process with no essential change as one moves from the freshman to post-doctoral student, that there is no reason to postulate or perhaps one should say to admit or permit any change in costs at the various levels, but we do not accept this view. It is not that we believe that the education of the freshman is any less important or in one sense is any less difficult than that of the upper division student or the candidate for the master's degree or the Ph.D. or the post-doctoral student, but rather that to achieve a comparable quality of educational experience requires more faculty time per student, more expensive faculty, and frequently more expensive library, laboratory, and research facilities the higher the level of instruction.

Students in different programs are simply different products; in some situations we have some difficult problems of joint cost allocation and we have to solve them as arbitrarily as industry does. Certainly there is no more reason to expect the cost of engineering education per student to be the same as the cost of medical education per student, than to expect the cost of a stethescope to be the same as that of a theodolite. Finally we know that high quality production usually involves increased cost whatever the product, and that differences in productive methods can result in wide differences in costs of production.

Let me first dispose of the last category: differences in the quality and/or methods of instruction. This involves not a single variable but rather two closely related variables. Our philosophy is that it is the duty and privilege and responsibility of each campus to devise methods of instruction which will be optimal in terms of quality of instruction for its particular situation in terms of total numbers of students and of its student mix by level and program, but subject to the general constraint that, for its particular number and mix, its total costs should be no higher than the standard or norm for that number and mix.

This obviously implies that there is such a standard and I shall now try to explain briefly how we are developing such a standard.

Development of Standard

Our problem has been to try to unravel the relationship of cost to volume of instruction, level of instruction, and instructional program or discipline from a limited body of cost data which reflects the combined effects of these three variables plus independent differences in methods of instruction and possibly of quality of instruction. Frankly, the data is grossly inadequate to the task, but we have done the best we could with it. We are rapidly accumulating more data and we hope to make it more accurate and more refined as time goes on.

To date we have concentrated primarily on the first two variables and have dealt somewhat summarily with the problem of differences in program. We have felt justified in this because, except for the San Francisco Campus, each campus is to provide instruction in all the standard disciplines and will provide professional and advanced training in several areas. Thus it has seemed reasonable, at least initially, to establish norms for "general campus" operation excluding the medical centers at San Francisco and Los Angeles and Veterinary Medicine at Davis, while recognizing the need for permitting exceptions on an ad hoc basis if circumstances require a campus to have a relatively large program in a relatively high cost area at an early stage in its development. We may ultimately find it desirable to establish norms for each discipline or even each department, but there are a number of cogent reasons for avoiding too much refinement of this kind.

Our treatment of the effect of costs of differing levels of instruction is fairly orthodox. We have attempted to measure the relative cost per Student Credit Hour (SCH) and/or per student at six different instructional levels: lower division, upper division, graduate professional, master's degree, first stage doctoral, and second stage or advanced doctoral.

The components of instructional time more readily accepted and identified with instructional costs are organized class time, tutorial instruction and non-course instruction (i.e., the faculty time spent in guidance of student research), oral and qualifying examinations, etc. Expenditures for faculty departmental research time, however, present an entirely different set of considerations. It has been argued that research time is a distinct and independent responsibility of a university and as such should be supported budgetarily on its own merits and should not enter into the computation of instructional costs. Yet, one of the significant distinguishing characteristics of the leading universities is that every faculty member expects and is expected to engage in research in addition to his regular teaching duties. Then again there is the familiar and very cogent argument for the inseparability of teaching at the graduate level and research: a university is, almost by definition, the place where teaching and research are joined. Effective teaching, at least at advanced levels, is best accomplished by one who is himself actively engaged in the pursuit of knowledge; teaching and research contribute to each other in many ways.

Design of Study

The subtle but very real distinctions embodied in these positions suggest three alternative means of interpreting faculty research time in relation to instructional costs: (1) exclude all of faculty research time from consideration in determining instructional costs, (2) assign to instructional costs only that portion of research time which is directly applicable to teaching, and (3) allocate all faculty research time to instructional costs. The latter two alternatives immediately give rise to an additional consideration: should these costs be allocated to all students, to upper and graduate division students only, to all graduate students only, or only to the most advanced graduate students.

Practical problems related to our continuing struggle for adequate budgetary support from the State Legislature have led us to develop an approach which combines alternatives two and three: we first segregate departmental research into two categories based on our periodic faculty load studies--"research teaching" and "other departmental research." We allocate "research teaching" costs to all levels of instruction in proportion to the time which the faculty actually spends in teaching at the various levels, but assign "other departmental research" costs exclusively to the advanced doctoral instruction. The significance of this approach is twofold: (1) it "provides" research time to the faculty of professional schools and the so-called emerging campuses which may have few or no advanced doctoral students, and (2) it assigns the major part of research costs to the advanced doctoral students. In practice, this presently results in the allocation of approximately 40 per cent of total departmental research costs among all levels of instruction and 60 per cent to advanced doctoral work alone.

Finally we turn to the impact of volume of output on costs. Here we have attempted to develop production functions for lower, upper, and graduate level instruction, using the Student Credit Hour as our measure of output and faculty teaching time as shown in the class schedule data as the measure of input. Using both historical and cross-sectional analyses of these data, we have developed what we call indices of productivity or maturity which relate Student Credit Hours per Full-Time Equivalent faculty--which may be thought of as a measure of average productivity--to the number of

Full-Time Equivalent students at the particular level of instruction on a campus.

We then combine the weights by level of instruction and the indices with the projected enrollments to obtain a measure of the relative need of each campus for faculty and related financial support. The number of students at each level is divided by the index for that number at that level: these quotients are then multiplied by the appropriate weight and the resulting products can then be summed to obtain the modified or indexed number of weighted FTE or lower division equivalent students. In order to determine how many faculty this campus should actually be budgeted for, it is necessary to obtain a uniform weighted student-faculty or student-staff ratio by summing the modified students projected for all campuses and dividing the sum by the total number of faculty that the State is expected to be willing to finance. The number of modified weighted students on the one campus would then be divided by this ratio to determine its share of the total faculty.

This approach to the solution of our problem has received approval in principle by the University administration. Our next tasks are to sell it to the Senate committees and to the State. We have some interesting days ahead.

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PROBLEMS IN INTER-INSTITUTIONAL COOPERATION IN RESEARCH

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THE ATTENDANCE and the interest in this Third Annual National Institutional Research Forum is evidence of the acceptance by higher education administrators and governing boards of the role to be played by the institutional research office. The institutional research office obtains objective evidence of the status of the institution--or institutions--and, through analyses and interpretations, develops guidelines for solving problems as well as for orderly long-term growth. Whether the research is inter- or intra-institutional, personnel must be provided who can do the job. Institutional research offices have been created in ever-increasing numbers during the past 10 years to do the research tasks that formerly had been neglected or had been inadequately performed.

A basic difference between intra-institutional (involving one institution) and inter-institutional research (involving two or more institutions) is that the intra-institutional study tends to be detailed and pointed to given colleges, departments, or other units, while the inter-institutional study tends to be more general in scope and treatment.

For purposes of this presentation, I will limit the definition of "research" to the systematic investigation of existing operational similarities or differences between two or more institutions, having as its objective the resolution of common problems or the formulation of hypotheses to study problems still unresolved.

W. H. Cowley[1] has described educational research as "any thorough-going investigation of an educational problem; and institutional research in higher education constitutes such an investigation of any topic concerning which a college or university or a group of them collects or seeks to collect data toward the end of improving operations."

John Dale Russell[2] has identified such research as applied rather than basic and stated that most commonly such research consists of studies of status; descriptions of current practices and conditions; studies of trends, particularly historical sequences; and evaluative studies which compare the outcome of different policies and procedures.

Our consideration, then, is of a type of inspection and analysis that is directed toward some immediately practical application.

While institutions in the past have been better known by their reluctance to divulge their operations to an inspection that would permit comparisons with another institution, they are now finding that the advantages to be gained by such comparisons, and the accompanying communication and exchange of ideas, benefit them more than harm them. Continued rapid increases in enrollments, limitations of financial resources, shortages of properly trained faculty and other personnel, and demands on physical facilities are some of the problems common to all institutions that must be examined carefully for possible solutions.

Objectives of Inter-institutional Studies

Inter-institutional research may be justified for one or for many reasons. These reasons may vary according to the purposes of different institutions as well as according to the unsolved problems of the institutions. At any rate, a basic purpose is to help the institutions to establish control over the future by establishing objective guidelines to be followed.

A list of reasons for doing inter-institutional research is likely to include the following, in whole or in part, but not necessarily in the order listed:

1. To provide the design for intelligent planning for the future:
    a. To collect status information for making decisions.
    b. To identify needs.
    c. To note changes from earlier studies.
2. To suggest ways to improve the efficiency of operations:
    a. To compare with peer institutions; note similarities, differences, different approaches to problem solutions.
    b. To reduce unnecessary inter-institutional competition.
    c. To prevent undesirable duplication of high-cost, specialized programs.
    d. To identify areas of possible cooperation and suggest means of coordinating efforts.
3. To improve instruction and student services: To insure orderly development of programs.
4. To provide objective measures and normative guides for budget-making.
5. To anticipate and prevent problems from occurring.

Topics Most Frequently Included in Inter-institutional Studies

Studies made by the U.S. Office of Education[3] for the periods 1951-55 and 1956-59 provide information on the areas most frequently investigated in 202 cooperative studies in an eight-year period. These 202 different studies had a combined total of 652 topics covered. The most frequent of the seven major topics was enrollment, which was followed in turn by programs, financing, organization and administration, physical facilities, junior college development, and faculty. These topics were included on a frequency that ranged from a high of 60 per cent for enrollment to a low of 36 per cent for faculty (See table on page 149).

Kinds of Problems Encountered in Inter-institutional Research

This statement appeared in the introduction to the Second Look at the Sixty College Study: "Higher education is the only major financial enterprise in America that is not supplied by a fact-finding agency, such as a trade association, or an industry-sponsored research bureau, with financial data in such form that administrators of colleges and universities can readily identify variations in the operations of their own institutions from established norms for higher education as a whole."[4]

Educators and those who have a responsibility for research and for administering institutions of higher edu-

DISTRIBUTION OF TOPICS IN 202 STUDIES

Topics	1951-55	1956-59	Total	Percentage of Studies Which Included Each
Total Studies	49	153	202	
Enrollment	31	91	122	60
Programs	25	80	105	52
Financing	25	75	100	50
Organization and Administration	28	62	90	45
Physical Facilities	13	72	85	42
Junior College Development	16	61	77	38
Faculty	13	60	73	36

cation recognize the situation just mentioned as a major deterrent to evaluating their work, and some are beginning to do something about accumulating such a body of knowledge. Various educational agencies compile data for specific purposes. However, whether local or national, there still needs to be greater attention given to identifying, defining, and collecting on a systematic and timely schedule the facts needed for making decisions and for planning.

Experience with inter-institutional research projects that have been coordinated in the U.S. Office of Education indicates that three major problems may be expected; these are:

1. Inadequate institutional record-keeping for furnishing needed data.
2. Unwise assignment of institutional personnel to the joint project.
3. Lack of agreement in establishing and holding to priorities to assure that target dates can be met.

An investigation of many inter-institutional research studies, primarily outside the U.S. Office of Education, indicates that the following items often become handicapping problems. Not all of them are common only to inter-institutional studies. Most are encountered in any research effort. They may be fitted into five groups:

1. Identifying the problem and setting up the research plan
   a. Inadequate advance planning to insure maximum benefits.
   b. Inadequate or unclear statement of the problem or problems; failure to set specific limits on the problem.
   c. Lack of set of definitions to be used, preferably ones having national acceptance.
   d. Failure to agree upon definite plan for conducting the study, including the procedures and techniques to be used.
2. Securing personnel and facilities to do study
   a. Inadequate and unqualified personnel assigned to project.
   b. Insufficient budget.
   c. Inadequate space to house researchers and data.
   d. Inadequate travel funds.
   e. All cooperating units not equally sold on the importance of the research.
3. Collecting and processing data
   a. Data not readily available.
   b. Inadequate clerical and

machine service to process data.
   - c. Inability to maintain performance schedule.
4. Stating findings, recommendations
   - a. Failure to identify areas needing depth studies.
   - b. Insufficient publicity to let others who are potentially interested parties know what is going on.
   - c. Compromises that weaken recommendations.
   - d. Failure to give adequate consideration to differing points of view.
   - e. Prejudices, self-interest showing.
   - f. Failure to make recommendations that are realistic in achievement.
   - g. Failure to provide norms for future comparisons.
5. Putting recommendations into effect; follow-up
   - a. Lack of opportunities to follow up on findings, recommendations.
   - b. Resources required to put recommendations into effect not provided.
   - c. Failure to "sell" recommendations.
   - d. Inaccurate interpretation of recommendations.

Institutional Differences that Cause Problems in Inter-institutional Research

A claimed strength of higher education in the United States is the individuality of each institution. One institution does not want or dare to be too much like another. For purposes of inter-institutional research, this characteristic creates problems such as the following:

1. Differences in objectives and purposes may force an institution into a mold which it may not feel is a good fit.
2. Differences in budget, fiscal year, and accounting procedures cause problems in securing comparable financial data.
3. Differences in size, services provided, and utilization of resources make meaningful comparisons difficult.

Things that Could be Done at the National Level to Improve Inter-institutional Research

Even if it were practical, it is not desirable that higher education institutions be fitted into a uniform pattern of administration, teaching, and services. However, there appear to be many areas in which greater uniformity could be accomplished to the mutual benefit of all.

As one agent at the national level, the U.S. Office of Education has an assigned role in the collection, dissemination, and improvement of education. Through its data-gathering activities, the Office has much influence on the kinds of records kept. It appears that the time has come for a reassessment of the role of the Office in carrying out its basic function of service to the education community.

It is important to recognize that automation is a fact of life, and our only concern now is not whether to use it but how to make the fullest use of it. To do this will require that planning steps be taken to serve the institutions and the nation more effectively. These steps include (1) developing definitions and techniques for gathering and reporting data, (2) planning long-range programs of studies, (3) meeting needed deadlines for reporting findings, and (4) providing more specialized services from the national level.

In case the relationship of this needed reassessment to the improvement of inter-institutional research is questioned, it seems well to note that one of the most serious barriers to effective inter-institutional studies at the present time is the lack of common definitions and common administration of routine activities. It is conceivable that many inter-institutional studies would not need to be made if meaningful data were available on the national level. It is apparent that many overlapping and duplicating studies could be eliminated as a result of the development of definitions acceptable to institutions, associations, boards of higher education, and national data-gathering agencies. With other elements of the program developed and initiated, a fact gathered and reported would have the same meaning in all inter-institutional comparisons, whether it pertained to enrollment, financing, facilities, or personnel. These improvements could be accomplished, it seems, without interfering with the need for an institution to be individualistic.

I will conclude with an illustration used by my colleague in the U.S. Office of Education, Dr. Harold A. Foecke, Specialist for Engineering Education: "To summarize my general feelings (regarding a data-flow system) I might resort to an analogy with another kind of system--the electrical power system of this nation. Before all of the separate power companies could be interconnected into a national system, before the characteristics of the suppliers of power and the needs of the consumers of power could be reconciled, agreement was necessary on a common frequency, on standard voltages, standard power ratings, etc. But the successful interconnection of suppliers and consumers does not solve the problem of determining the dynamic behavior of the entire system, does not disclose how changes in one part of the system affect all other parts. What fluctuations in the voltage supplied to one section of a city are caused by turning on all of the arc lights in the adjacent stadium? If the generating capacity of one power plant is lost (e.g., due to flood), can other remote power plants handle the temporary overload? Getting everybody properly 'hooked up' into the same system is one thing, understanding the characteristics of the entire system well enough to anticipate (and perhaps compensate for) the response to various kinds of 'disturbances' is another matter. So too with our educational system--we must work imaginately and tirelessly to get our educational institutions coupled into an adequate and acceptable system, but we must simultaneously explore the emerging characteristics of our educational system."[5]

The possibilities for improvements in research, data-gathering, and reporting in the field of higher education are challenging. We must determine what steps need to be taken to make the improvements, such as a standard terminology and uniform accounting procedure, and then put the improvements into practice. Inter-institutional studies would benefit, as would education groups at all levels. In a period when we are called upon to produce both quality and quantity, and when we are eager for action in our fast-changing world, it behooves us to move with full speed ahead in areas that will assist in accomplishing our purposes.

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NATIONAL INSTITUTIONAL RESEARCH FORUM

ASSESSING THE EFFECTS ON LEARNING OF THE NEWER MEDIA

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THE GENERAL THEME of this conference is "The Role of Institutional Research in Planning." It is appropriate, therefore, for this seminar to develop its special subject within this general theme.

This paper will deal with the problems of "Assessing the Effects on Learning of the Newer Media," with emphasis on the use of the results of such assessments for planning purposes. However, since administrative initiative and leadership always involve planning, the subject should have values for a broad range of educational administrative functions.

In order to work in this frame of reference, this paper and perhaps the following discussions, will follow a different pattern than would be followed if the discussions were intended for learning theorists, analytical researchers, experimental design specialists, and mathematical statisticians. Elements from these areas of interest, however, will necessarily be included. In brief, we shall attempt to contribute to the development of the general theme of the conference and at the same time deal constructively and imaginatively with the special subject assigned to us.

The assigned topic needs some elaboration and definition in order to limit and focus our discussions. It is suggested that assessment be broadly conceived to include, not only the measurements of the effects on learning, but also the problems and evidence relative to introducing the newer media into colleges and universities and using them as regular parts of academic programs.

This panel may wish to agree to define learning effects as induced changes in behavior of many kinds and levels which occur in the direction of academic learning goals and defined performance criteria. It may be agreed, also, that we are discussing a broad spectrum of levels of learning, although there should be some debate on the relative appropriateness and efficacy of the newer media for regulating very advanced and complex human learning.

The implication in the statement of the subject under discussion, that the newer media have an effect on learning, needs careful discussion and clarification. Terminology which imputes learning effects to media, as media, although the terminology is widely used, is the basis for both misconceptions about the roles of media in education and misinterpretations of research results on the "newer" media. Attention needs to be focused, rather, on the instructional and communication processes which operate through the media, and especially as these processes interact or transact with students. There are probably some effects which are correlated with the specific phenotypical characteristics of some kinds of media, but these effects probably constitute a very small part of the total configuration of the many variables and determinants which instigate meaningful human learning. Most probably the modes in which stimulus materials are cast, e.g., print, sound, pictorial and graphic modes, and the formats used greatly outweigh the effects of the special characteristics of particular media. For example, in terms of the impact on learning, and waiving the considerations of practical management and apparatus, it seems of little consequence whether a particular unit of instruction is mediated through sound motion pictures, video recording, or television. The central consideration would seem to be what modes of communication, medium or media combinations, old or newer, can be used most effectively to meet the requirements and conditions for the desired kinds of learning.

Assessment of Learning as a Primary Task of Institutional Research

It is proposed, as a basic proposition, that all educational institutional operations should be conducted with the clear and expressed purposes of providing resources for extending and increasing the quality of academic learning. About each operation, therefore, whether it be planning buildings and facilities, studies of student characteristics, or the governance of faculty composition and efforts, the primary question should be: How do these operations affect learning so defined as to include the personal, intellectual,and professional development of students? Another way to ask this important question is: What are the contingencies of each institutional operation to the students' academic achievements?

A positive and very general statement of the task is this: How can an institution provide learning environments, an ecology for learning activities, or the conditions for learning which maximize the possibilities that the main academic purposes of an institution may be accomplished most effectively and efficiently?

To answer the stated questions or to attack and accomplish this task requires many kinds of assessments, judgments, decisions, and evaluations. Institutional research has a special responsibility for collecting dependable evidence which can serve as the basis for such evaluative and judgmental behavior. Ideally, also, institutional research people should participate in the administrative processes which interpret the evidence after they have collected it, and aid in applying the conclusions to practical problems.

The Problem of Assessment in the Selection of Media

The media which are available, or can be designed and produced, should be assessed as components of integral systems of educational technology which have close contingencies to instruction and learning. Provisions for and use of the media can be thought of as attempts to provide instrumentation for instruction and learning, and especially as attempts to provide optimum conditions for learning. Therefore, in any medium, or media combinations, the modes of communication used for organizing and presenting stimulus materials, and for providing for reactions and reinforcement, must be assessed for their adequacy in terms of the possible effects on desired kinds of learning.

What are the media and modes of communication that we are considering? Generally, we are discussing a very wide range of kinds of equipment which has been designed and built for the encoding, organizing, storage, retrieval, distribution and display of information, content, or stimulus materials for learning. More recently other functions, considered necessary for learning, have been added. Provisions are being made in some new equipment designs for specified or selective reactions of learners, and for the reinforcement and reward of learning efforts. Another way to describe the media and media systems that we are discussing is to say that we are assessing the possible technology which should help solve the logistical, strategic, and tactical problems of the management of academic learning.

We are discussing a wide range of facilities for handling audio and video channels of communication which supplement, extend, and even replace normal person-to-person instructional behavior. Examples are sound amplification systems, audio and video recordings, projectional and enlargement equipment of many kinds; also, distribution, reproduction, and display systems like wired sound, radio, sound motion pictures, and television. We might include teleprompters, telephones, simulation devices, and print procedures and reproducers, as well as programmed books, teaching machines, and special purpose computers used for regulating and implementing the requirements of learning. Finally, as examples, a comprehensive discussion of the "newer" media cannot omit language or learning laboratories, new types of semi-automated instructional auditoria and new developments of micro-miniaturized laboratory apparatus, perceptual-motor skills trainers, provisions for extending human sensory capabilities, and many kinds of arrangements for provoking persistent learning responses and their reinforcement.

Thus, it can be seen that due to the great variety of kinds of newer media and the complexities of their operations and applications, the assessments of their specific effects on learning is a formidable task. Therefore, we are compelled in this seminar to deal with the assessment problems on a level of considerable generality.

Questions which Assessments May Help to Answer

When assessments of the newer media are made to collect evidence that will be useful for planning and administrative decisions, a wide range of kinds of assessments is needed. Assuming that the purpose is to extend and improve learning, and that evidence will be accepted and used in making decisions about the newer media, then the work of institutional research men should be directed toward answering, among others, the following kinds of questions:

1. What are the functional specifications or requirements, relative to instruction, stimulus materials, mediation, and learning, which need to be implemented?
2. Do media or media combinations and assemblies, which appropriately and reliably serve the specified functions, exist and can they be purchased?
3. Is there the need to design and construct new equipment components or systems which will meet the special requirements for mediating and instigating learning?
4. Provided the necessary media capabilities are available, can the content, programs, or stimulus materials that are appropriate to the learning tasks be produced in suitable forms for them, in adequate quantities, and of high quality and effectiveness?
5. Can the instrumentation, using appropriate instructional materials and supporting resources, be operated successfully in a normal or existing academic context?
6. Will the operation of the whole integrated instructional system meet practical standards of feasi-

bility, *reliability*, *economy*, and the "man-machine" interdependencies?

7. Can the medium or media combinations be used extensively enough *for the right purposes* and academic areas to justify the investments of funds and effort?

8. Relative to other options of resources and strategies for providing the means for satisfying the requirements of academic learning, do the "newer" media have practical advantages or limitations, which must be known both in kinds and degree and which should affect administrative decisions on their uses in educational institutions?

9. What is the evidence from controlled comparative and analytical studies about the effects of the media, the content and use patterns, on learning in terms of the best possible performance criteria?

10. And finally, what is the evidence on the extent or scope of uses and the patterns of uses over the different levels and ranges of institutional functions and, when reasonable limits are reached, what will be the effects on the organization and financing of the institution?

All of these questions set the general tasks for institutional research on assessments of the "newer" media. Too often media research has not been comprehensive enough to provide all of the answers that are necessary for making the best administrative and management decisions. For example, research on variables operating through the media, on limited kinds of learning tasks, do not provide all of the evidence needed for deciding what media should be built into plans for an institution, or what media and support resources should be provided for different curricula and for different faculty members and students. Controlled analytical research on the effects of stimulus materials mediation by means of television, although important even if findings fall short of statistical significance, cannot provide all of the evidence needed to decide whether or not, how, and to what extent instructional television should be employed in an institution. The evidence, which answers satisfactorily the ten questions stated previously, should constitute an adequate basis for resolving the principal *rational* issues involved in the uses of media in higher education. Of course, however, there are *irrational* issues and hundreds of other more specific and *ad hoc* questions.

Considerations Relative to Methods of Assessing the Effects on Learning of the Newer Media

Full-range assessment of media effects on learning involves a variety of approaches, strategies, and experimental designs.

Reviews of the research on the newer media and their applications reveal weaknesses in the conceptual and theoretical basis about what the media are, and the kinds of influences on learning which are mediated by them. There is a widely prevailing *mystique* which ascribes power and characteristics to the media, *as media*, which they do not and cannot have. The basic fallacy is the ascription of effects to the media which are in reality properties of the stimulus content, its organization, and the modes or formats by which the information is represented. A second conceptual fallacy is an underestimation of the amount, strength, quality, and duration or repetition that is required of stimulus materials, assuming the best transactions with the subjects, for significant new learning behavior to occur.

A third fallacy is the concept and expectation that the selection and manipulation of single variables of a multivariant field of perhaps a hundred equally potent variables will produce significant differences in complex human learning. A fourth related misconception is the assumption that the ranges of variables, which act as determinants of learning, fall within the limits of control of media processes and influences. In particular, important characteristics of learners like learning "sets" and expectations, interests and motivational patterns, learning abilities, and perceptual skills have not been brought under control of the media. A fifth and final conceptual fallacy that might be discussed by the panel is what might be termed the input-output fallacy. This conception holds that stimulus presentations, as presentations, result in desired learning responses without other measures being taken to insure that appropriate learning responses occur. This view is based, also, on the uni-directional flow concept of communications, through channels, to the learner, and hence lead to the desired effects. Instructional communication is more transactional, involves many transformations, and instigates varied responses, especially in different individuals. The correlations between meaningful stimulus presentations and learner responses are generally of a low order.

These five fallacies can be translated into parts of a positive conceptual framework for experimental designs.

A Perspective on the Sampling Problem

The institutional researcher confronts a complex set of sampling problems. Let it be assumed that samples of many kinds that are built into the experimental model should provide the basis for reasonable generalizations of results and conclusions. First, there is the sample selection of the medium or media combinations to be used along with carriers of information and modes, e.g., print, graphics, pictures or signs, signals and symbols, or the different semantic levels. Second, there is the component sample of content, its kind, academic level, and its inherent and modified structure. Frequently in media research the quantity of the instructional material, and the limited period of time covered by its presentation, prevent generalizations to a broad spectrum of academic programs. A half course or preferably a full course is perhaps necessary in order to produce dependable and generalizable results.

Third, not only the amount but the quality of the stimulus materials is another desirable sampling consideration. Rarely is the quality of the production of experimental materials representative of the best possible quality, and levels of production qualities are rarely considered as a sampling problem. Finally, there is the consideration of the testing and assessment context, the normality of controls, and the descriptions of this context relative to the context of the expected applications of results. Single variable laboratory experiments, however important for testing theoretical hypotheses, may have little congruence with academic environments where the results may need to be applied. Furthermore, large universities are so heterogeneous from one academic area to another, that assessments made in one area may not be applied or accepted in another area, department, or college. For example, few science educators perceive any relevance to their instruction of language laboratory equipment and methods. The variations of learning environments of different institutions raise yet another question about the extent to which assessments of the effects of media on learning in one institution can be applied and are acceptable in other institutions.

The Problem of Accumulating Additive Research

All of these considerations lead to an important methodological and practical question: How can research and evaluations of media uses, to meet the conditions required for effective learning, be conducted, analyzed, and reported so that the results will add up or summate?

One answer to this question is to conduct the required number of exact replications of important experimental assessment of learning where the newer media are used. Instances of strict replication, in different contexts, are rare indeed. There is the urge to do the experiments differently.

The other answer to the question is to use acceptable standards for experimental designs, controls, measurement, statistical analyses, and logic of inferences. Too often in media research, such standards are not met. For example, Stickell has found that only ten out of over two hundred comparisons of direct instruction compared with televised instruction met reasonable criteria or standards while about thirty other comparisons could be qualifiedly accepted. Incidentally, all accepted comparisons showed "no significant statistical differences." Such faults were committed as using different teachers, lack of random assignment of subjects to comparison groups, and using very limited amounts of instructional materials. Institutional researchers should place more emphasis than is now done on the problem of making assessments which can be summated.

Suggestions Relative to the Measurement Problem

There is one final point which should be made in this incomplete treatment of the subject of this seminar before the panelists take over the discussion. The general problem is that of having entirely adequate and valid measures of the different kinds and levels of human learning. In addition to well-known requirements for measures of learning, two possibilities seem to hold promise. First, for many purposes the modes of the measurements should be the same as the modes of the stimulus materials that were employed in the experiments. For example, when the stimulus materials are in the pictorial or graphic modes, test items and criteria should also be in the pictorial or graphic modes. Verbal commentary stimuli should be tested by oral test items. The required and practiced learning responses should be measured by tests of the same kinds of responses. If, however, transfer and generalization are to be measured, then this should be defined as an additional set of measurement requirements.

The second suggestion, to which the panel members may wish to react, is that efforts should be made to invent and develop concurrent measures of immediate learning. Examples of what is suggested is the technique of inserting criteria test items in units and sequences of programmed learning materials, unit tests, the attempts to plot profiles of learning, and the use of computers as a means of rapidly assessing learning concurrently, or at frequent intervals, as learning occurs.

The third suggestion is that assessments are urgently needed of transfer and long-term perseveration effects. Few efforts have been made, as yet, to measure the effects of mediated learning in one course of instruction on more advanced courses. The difficulties involved in such assessments do not justify the neglect of making them. The transfer and generalization problems are both formidable and important. It is suggested that, to provide for transfer and generalization, such performance training must be provided systematically in the instructional-learning programs.

The subject is now open for constructive criticism and extensions by the panel members. Far more questions have been raised than answers given.

PROGRAM

THIRD ANNUAL NATIONAL INSTITUTIONAL RESEARCH FORUM

Sunday, May 5

7:45 p.m. - General Session

General Chairman: L. Joseph Lins, Professor and
Coordinator of Institutional Studies
The University of Wisconsin

Welcoming Remarks -- Randall M. Whaley
Vice President for Graduate Studies and Research
Wayne State University

"A President Looks at Institutional Research"
Francis H. Horn, President
University of Rhode Island

Monday, May 6

9:00 - 11:00 a.m. - Seminars -- "Institutional Research as a Basis for Planning"

Section I - Public Institutions

Moderator: Thomas H. Shea, Director, Research Office
State University of New York
Speaker: John Dale Russell, Director Emeritus
Office of Institutional Research
New York University
Panelists: Kevin Bunnell, Associate Director
Western Interstate Commission for
Higher Education
Stanley O. Ikenberry, Assistant to Provost
for Institutional Research
West Virginia University
William H. McFarlane, Director
Virginia State Council of Higher Education

Section II - Public Institutions

Moderator: John E. Swanson, Director of Institutional
Research, Auburn University
Speaker: A. J. Brumbaugh, Consultant
Southern Regional Education Board
Panelists: Charles E. Howell, Director
Bureau of University Research
Northern Illinois University
Wayne W. Loomis, Institutional Research
Associate, Eastern Washington State College
Kenneth G. Nelson, Chief Higher Education
Surveys, U.S. Office of Education
E. F. Schietinger, Research Associate
Southern Regional Education Board

Section III - Large Private Institutions

Moderator: Philip H. Tyrrell, Director
Office of Institutional Research
Rensselaer Polytechnic Institute
Speaker: Stuart Grout, Director of Institutional
Research, Boston University
Panelists: Louis Conger, Director Studies and Surveys
Branch, U.S. Office of Education
Francis J. Donohue, Executive Director of
Self-Study, Fordham University
Darrell J. Inabnit, Director of Institutional
Research, University of Miami
David V. Martin, Coordinator of Institutional
Studies, Duke University

Section IV - Small Private Institutions

Moderator: Thomas E. Leaver, Director Bureau of
Institutional Research, St. Joseph's College
Speaker: James L. Miller, Jr., Associate Director for
Research, Southern Regional Education Board
Panelists: Robert R. Barnes, Director of Institutional
Research, Franklin and Marshall College
L. A. Brown, Dean and Vice President for
Academic Affairs, Transylvania College
Robert F. Grose, Registrar and Associate
Professor of Psychology, Amherst College
S. D. Schaff, Director Testing and Vocational
Services, Denison University

1:00 - 3:00 p.m. - Special Seminars

Section A - "Pre-Admissions Evaluation and College Scholastic Progress Patterns"

Moderator: Willard G. Warrington, Director
Office of Evaluation Services
Michigan State University
Speaker: John R. Hills, Director of Testing and Guidance, University System of Georgia
Panelists: Clinton I. Chase, Assistant Director
Bureau of Educational Studies and Testing
Indiana University
Arvo E. Juola, Associate Professor
Office of Evaluation Services
Michigan State University
Allen H. Kuntz, Director, Student Testing Center, State University of New York at Buffalo
John E. Milholland, Chief, Evaluation and Examination Division
University of Michigan

Section B - "Use of Space Utilization Studies in Physical Plant Planning"

Moderator: Frederick E. Schwehr, Physical Facilities Specialist, Board of Regents of Wisconsin State Colleges
Speaker: John X. Jamrich, Professor of Higher Education and Assistant Dean, College of Education
Michigan State University
Panelists: William Fuller, Director of Bureau of Physical Facilities Studies, Indiana University
Donovan Smith, Specialist in Physical Planning
University of California
Charles B. Woodman, Planning Officer
Boston University

Section C - "Needed Research in Special Areas (Faculty Characteristics, Non-Academic Personnel, Graduate Students)"

Moderator: James I. Doi, Associate Provost
University of Colorado
Speakers: Algo D. Henderson, Director, Center for Study of Higher Education
University of Michigan
Reece McGee, Associate Professor of Sociology
University of Texas
Panelists: James L. Miller, Jr., Associate Director for Research, Southern Regional Education Board
John E. Swanson, Director of Institutional Research, Auburn University

Section D - "Faculty Satisfactions and Dissatisfactions"

Moderator: John E. Stecklein, Director of Bureau
of Institutional Research
University of Minnesota
Analysts: Robert L. Lathrop, Research Associate
Bureau of Institutional Research
University of Minnesota
Harlan R. McCall, Professor of Education
and Director of Placement, Alma College
Joseph Tanenhaus, Assistant Director for
Institutional Research, New York University

7:30 p.m. - Meeting of Steering Committee

Tuesday, May 7

9:00 - 11:00 a.m. - Special Seminars

Section E - "Student Follow-up Study - A Research Design"

Moderator: Clifford T. Stewart, Director of Evaluation
Services, University of South Florida
Paper: Lewis B. Mayhew, Professor of Education
Stanford University
(Mayhew paper read by Clifford T. Stewart)
Panelists: Junius A. Davis, Research Psychologist
Educational Testing Service
Edward C. McGuire, Assistant to the President
University of Rhode Island
Laurence Siegel, Director of Instructional
Research Service, Miami University

Section F - "Budgetary Implications of Faculty Load Studies"

Moderator: John M. Evans, Fiscal Vice President
The University of Connecticut
Speaker: D. Gordon Tyndall, Director of Analytical
Studies, University of California
Panelists: Wesley Arden, Director, Institutional Cost
Studies, Purdue University
Theodore H. Drews, Administrative Assistant
Office of Vice President and Dean of
Faculties, University of Michigan
Edwin F. Hallenbeck, Director, Office of
Institutional Research
University of Rhode Island
LeRoy E. Hull, Assistant Director
Bureau of Institutional Research
Indiana University

Section G - "Problems in Inter-Institutional Cooperation in Research"

Moderator: James L. Miller, Jr., Associate Director for Research, Southern Regional Education Board
Speaker: W. Robert Bokelman, Chief
Business Administration Section
U.S. Office of Education
Panelists: John J. Coffelt, Coordinator of Research
Oklahoma State Regents for Higher Education
James I. Doi, Associate Provost
University of Colorado
E. Bruce Heilman, Vice President
Kentucky Southern College
Dorothy M. Knoell, Associate Research Psychologist, California Center for the Study of Higher Education

Section H - "Assessing the Effects on Learning of the Newer Media"

Moderator: Samuel Baskin, Director of Educational Research, Antioch College
Speaker: C. R. Carpenter, Director
Division of Instructional Services
The Pennsylvania State University
(Tape recording of speech)
Panelists: Wilbert McKeachie, Professor of Psychology
University of Michigan
S. Leonard Singer, Director of Learning Resources. Florida Atlantic University
Seth Spaulding, Media Branch
U.S. Office of Education

11:00 - 12:00 a.m. - Business Meeting

1:30 - 3:30 p.m. - "Clinics on Institutional Research Problems"

Section I - Public Institutions

Moderator: John E. Barrows, Director of Institutional Studies, University of Kentucky
Resource Persons: Clarence H. Bagley, Coordinator
Office of Institutional Research
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Dorothy M. Knoell, Associate Research Psychologist, California Center for the Study of Higher Education
E. W. Lautenschlager, University Registrar
University of Virginia
John E. Stecklein, Director
Bureau of Institutional Research
University of Minnesota
Recorder: L. S. Rowell, Dean of Administration
University of Vermont

Section II - Public Institutions

Moderator: Richard S. Lewis, Administrative Assistant for Special Services, University of Iowa

Resource Persons:
- James I. Doi, Associate Provost, University of Colorado
- D. J. Guzzetta, Vice President and Dean of Administration, The University of Akron
- Howard A. Knag, Director of Records and Evaluation, Queens College
- Robert E. McClintock, Director, Division of Institutional Research, University of Maryland

Recorder: LeRoy E. Hull, Assistant Director, Bureau of Institutional Research, Indiana University

Section III - Large Private Institutions

Moderator: Joseph Tanenhaus, Assistant Director for Institutional Research, New York University

Resource Persons:
- Urban H. Fleege, Associate Vice President for Planning and Research, DePaul University
- Robert Hewes, Registrar, Massachusetts Institute of Technology
- Rev. R. W. Mulligan, Vice President and Dean of Faculties, Loyola University
- Edwin D. Smith, Director of Institutional Research, Syracuse University

Recorder: Robert J. Kibbee, Assistant to the President for Planning, Carnegie Institute of Technology

Section IV - Small Private Institutions

Moderator: Hans H. Jenny, Director Institutional Research and Professor of Economics, College of Wooster

Resource Persons:
- Roy N. Baker, President, Bethel College
- Samuel Baskin, Director of Institutional Research, Antioch College
- Robert W. Hites, Head, Department of Psychology and Institutional Research Officer, Birmingham Southern College
- Elmer D. West, Director, Office of Statistical Information and Research, American Council on Education

Recorder: Robert R. Barnes, Director of Institutional Research, Franklin and Marshall College

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